Book D.

Epaphras Hoyt's book.

Book B.

Mathematical, Astronomical, Philosophical and Literary Journals and Miscellaneous Matter as it occurs to my mind.

Commencing April 1804.

Contents

4.

Needle's Variation Remarks on.

Course of the monument Line on Tok Mountains in 1802 as determined by my Brother Capt. Hoyt, N 3 W. Said Line, laid North by the needle about 1740; Variation 3 degrees in about 60 years, approaching the meridian. Since which time (1802) up to 1830 the needle has moved about 2° towards the west, or is receding from the meridian, and more rapidly than formerly to the East. ~~Why the change~~

In 1812 the variation was 5° 28 W. In 1730 it was a little over 7° W. in this Town. Why this change? The needle, I am inclined to believe, takes a direction, at all places, according to the action of the ferrugenous substance within its influence. If then those substances alter the force of their action the needle must vary its direction. Formerly these powers were greatest on the east side of the meridian, or those on the west side, were diminishing their powers, and it moved to the east. Then being reversed the needle must move in an opposite direction. If this hypothesis is correct, it only remains to account for this alteration of attraction; And here we are much in the dark; and must so remain until we have more data. — From the uncertainty of the variation, at different times, that tracing of old lines, is rendered difficult, especially where old boundaries are lost. If however the exact variation were always known and noted on plans of surveys, and its quantity determined at the time of the resurvey, the difficulty would in some measure be obviated.

From an investigation of the minutes I have made of the Courses of old Lines, it appears the change of the motion of the needle must have commenced about 1812; At this time the Variation may be put at 5°30 West. In 1832 it was 7° and more West; therefore the needle in 20 years has receded from the magnetic meridian 1,,30+x = 5,,30+x ∓ 1.30 = 7+x, at the rate of 4.30"+x per year.

Suppose in 1800, a course run N 20 E, what is the course in 1832. In the first 12 years the ∠ was = 2°— 34' (allowing 3' per year to the east) = 19.24. The following 20 years that = 19,,24 + 1..40 = 21-04 per Magnetic Course

* See article Variation 18 vol. Edinburgh Encyclopaedia — Hansteen's Theory.

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April.

Article 1

Latitude of Deerfield, by Meridian Alt. of the Sun.

April 15th 1804 the apparent alt: of the Sun, by a Quadrant graduated by concentric circles to — tenths of a degree, was ~~found to be~~ 57° - 10. Sun on Meridian and lower limb observed -

Operation for Lat:

Meridian Alt of lower Limb	57° - 10'	
Semi-diameter for 15 April	+ 15 - 58	by Nautical Almanac
	57 - 25 - 58	
Refraction — Subtract	— 37	
True central Altitude	57 - 25 - 21	subtract from 90
Zenith Distance	90	
	32 - 34 - 39	
Suns Declination at noon at Deerfield	+ 9 - 52 22"	see operation below.
Lat. of Deerfield Meeting House	42 - 27 - 01.	

Operation for Declination.

Decl. at Noon at Greenwich by Naut. Almanac	9° - 44' - 50" N.	
Reduction for 75° West Longitude (nearly that of Deerfield)	+ 4 - 32	
Decl. at Deerfield at Noon	9 - 52 - 22 N.	

Latitude by Meridian alt of Stem Regulus.

Alt. — (apparent)	60° 30' 11	
Refraction —	— 33	
True alt.	60 - 29 - 27	subtract from 90°
Zen. distance	90	
Declination	+ 12 54. 52	see below
Latitude	42 - 25 - 25	

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Operation for Regulus's Declination.

Declination by Doct. Zach (taken from Bowditch) Jan 1800
Viz — — — — — — — — — — 12° 56′ N.
Annual Variation 17,2 × 4 years = — — 1.08. subtract
Decl. of Regulus — — — — 12 · 54 · 52

Lat. by Ommition Alt — — — 42° 27′ 01″
Do by Regulus — — — — 42 · 25 · 25
2) 84 · 52 · 26 (
Mean, deduced from both Observations 42 · 26 · 13 = Lat Deerfield Mast. House

N.B. In the above calculations, no connection for Nutation and Aberration — This result is found, by other observations, to small by about 6′.

2

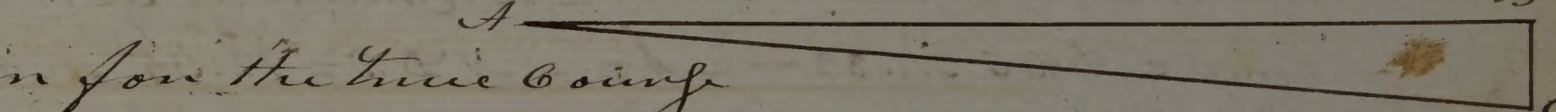
May 25 1804 Examined the lines of the Lots in Newport extending through Grass Hollows to Deerfield River. Found two antient Stones on the Line between Doct. Williams & Elijah Russell, One near the west end of the Lot standing in a grass grass road leading through Grass hollows to Amsdens Hill. The top of this Stone was neither below the surface of the Earth having been covered by the encrements of the floods. The other Stone is 40 or 50 rods from the River, in the Interval ground and is about a foot above the surface.

Began at the west Stone and ran S 3° 35′ E. Alt 22 rods. Just

up a stake marked A; at 40 rods just up a stake B; at 60 just up a stake C; at 80 just up a stake D; at 109 rods found the Course 28 links north of the East Stone. The Bushes being thick, which rendered running difficult it was thot advisable to calculate off sets at each Stake by similar Δs, and they were found as follows.

at Stake A — 5,6 Links nearly
B — 10,3 —
C — 15,4 —
D — 20,6 —

} These distances were carefully laid off, from the several stakes, to the South, for the true Line, and marks made in the intermediate trees &c.



2. Operation for the true Course

In the Δ ABC. there is given 1 side AB & BC & ∠ B to find ∠ BAC.

Then AB: Rad.:: BC: Tang. ∠ BAC = 3½° + . Then E 3°-3½' S + 35' = 4°-10' or E 4°-10' South.

With this Course, E 4°-10' S, on mutton with E 4°-0½' S the lower Jibbe of the index toward the East, I run a Line between Dan'l Williams & Capt. Nims, in the same tier of Lots, through Grass Hollow to the River, and came out very satisfactorily to the Pranties. This course is undoubtedly is the true Course of the Lots in this Division of Land.—

4
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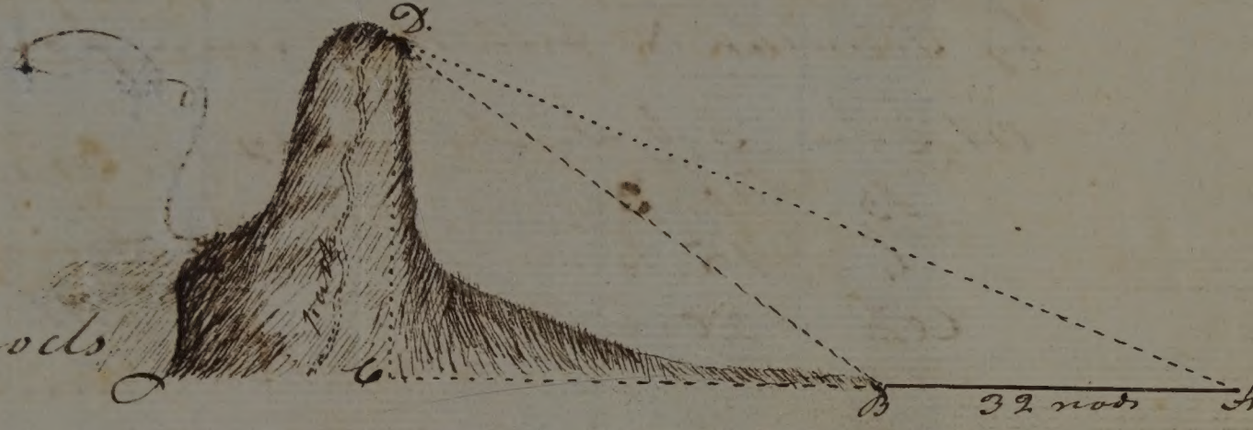
Height of the South Sugar-Loaf Hill near Harris' Ferry, by a Trigonometrical Calculation.

Observations taken in the level Field west of Mr Harris House.



A Ol. Alt. – 21°-57′

B. 02. Alt – 34-32

Distance of Os 32 Rods

∠ DBC 34°-32′ = ∠ A + ∠ ADB. (Euclid 1. 32.) Therefore angle DBC 34°-32′ – ∠ A = ∠ ADB = 12°-35′. AB 32 Rods = 528 feet.

In the Δ ABD there is given ∠s A & ADB, and side AB. to find BD.

Sine ∠ ADB = 12°-35′	—— ——	9,33818
: AB = 528 feet	—— —— ——	2,72263
:: Sine ∠ A = 21°-57′	——	9,57264
		12,29527
		–9,33818
: BD = 905,9 feet	——	2,95709

Note the point D is the exact edge of the flat Rock known by the name of the Gable. For

For the Line C D. the proportion is thus –

Radius — 10,00000
: BD = 905,9 feet — 2,95709
:: Sine ∠ CBD = 34.32 — 9,75350
: CD = 513,5 feet — 2,71059 Height of the Table.

Height of the Table — 513,5
Add 7 feet for height (7) point of the Mountain
520,5

Hence it appears that the perpendicular height of the Mountain above the surface of the Field west of Barnes House is 520,5 feet.

The top of this Hill is of an elliptical form, the two Diameters about 10 & 20 Rods, and is covered with timber. About half of the East side is perpendicular and, viewed from the east, presents to the eye a Rock of a reddish colour. The plain on the South and west sides is higher than that on which the observations for the angles were made, and consequently the Hill is not so high on these sides as on the east. When viewed three or four miles south of it's appearance is similar to that of an acute Cone shooting high into the air, except on the east side which approaches too near a perpendicular. From this appearance it has it's name – Sugar Loaf. The

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prospect from the top is delightful & extensive, particularly from the North east round by the South to the North west. The view to the north is obstructed by the north Sugar Loaf (a hill rather higher than the one we are discribing) & a range of high hills which commence at this point and extend northerly through the east part of Deerfield dividing the town street from Connecticut River, and terminating in Greenfield a little below the mouth of Fall River. Through this range of Hills Deerfield River according to the opinion of many has forced a passage about half a mile from its mouth, which is now cut down to the level of the Meadow which lies west of the abovementioned range of Hills. A tradition, handed down from the aborigines tells us that an old Squaw began this passage for the River, with a Clam Shell. Whether ~~we are~~ indebted to the old Squaw for this passage or to some convulsion of Nature I will not undertake to determine, but from a variety of appearances I think it may be asserted as highly probable that the greater part of the Land ~~on~~ which the town street occupies as well as the whole of the meadow adjoining was formerly the bed of a Lake; and that the ~~[illegible]~~ Mountain at the Rocks below the Cheapside Bridge once formed a dam over which the water of the Lake was precipitated into the channel leading into Connecticut River.

In support of this Hypothesis may be mentioned the vast

quantities of Logs & other drift wood; and even grass and the leaves of trees, which are brought into view by the vicinity of the Banks of the River, by the floods, in every part of the meadows. Some of these are found 10 or 15 feet below the present surface, and the Land over them is composed of different strata evidently have from stones. Now Let us suppose a Dam to be erected at the Rocks, below the Bridge, as high as the mountains on each side of the River, the effect would be a compleat inundation of all the Land, in the intervail between the Mountains, below the level of the Dam; and a Lake would be produced according to the supposition. Through the Lake the River would pass, and a great proportion of the drift wood and vegetable substances brought down the River after lying some time in the Lake would subside to the bottom, and be covered by the Sediment of the floods and then the bottom of the Lake would be continually rising. If we suppose this Dam to consist of substances that might be worn away by water, it follows that it would in time be entirely removed and the Lake would drain off and leave a bottom of such Land composed of sheets of earth and Logs similar to the that which in fact composes our Meadows.

Note. The hill through which Deerfield River has cut a passage, is composed of green stone, or basalt, formy a dyke, extending from Gilead Mass to New Haven in Connecticut. Hexagonal columns are found on the

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4- New Method of purifying Water which is corrupt.

To a gallon of foul Water add half an ounce alum powderously dissolved in a pint of warm Water, which will under the former, in forty eight hours, as clear as that of the finest spring.

European Magazine Vol. 43. Page 158.

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5 White-wash - A few handfuls of sea salt, mixed with about one bush. of lime, to be used in white-wash will make it adhere to the wall and destroy insects.

Sonnini Magazine 2nd Page.

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6 Of the purifying property of Charcoal.

Amongst other singular properties of Charcoal, it has lately been discovered by a Gentleman at Petersburgh, that all sorts of Glass vessels, and other utensils, may be purified from long retained smells and taints of every kind, in the easiest and most perfect manner, by rinsing them out well with charcoal reduced to a fine powder, after they have previously been scoured with sand and potash. - That people, whose breath smells strong from a scorbutic disposition of the gums, may at any time get perfectly rid of this bad smell, by rubbing and cleansing out the Mouth thoroughly with fine charcoal Powder. This simple application, at the same time, mends

1804. the teeth beautifully white. And that brown (or thinner colored) putrid stinking water may be deprived of its offensive smell & rendered transparent by means of the same substance. Hence he thinks it would be of use for preserving water sweet during sea voyages, to add about 5 ℔ of coarse charcoal powder to every Hogsh. of water; it being only necessary afterwards to strain the water off when wanted, through a linen bag. See the last Number of the Translation of Crells Chemical Journal.

Some Magazine Vol. 21 Page 214

1805. January 15th

Observations made by Mr. Allen Greely and myself, on the Lunar Eclipse January 15 - 1805.

	h	m	s	
Beginning of the Eclipse	1	55	52	apparent time in morning by Clock
Do total darkness	2	51	19	
End of total darkness	4	30	02	
Do of Eclipse	5	30	05	

The Clock was set by a regular going Watch, which was adjusted by a Meridian in ~~the~~ my office north of the meting-House, on the 11th at Noon. This meridian was obtained by a stellar observation; yet it is probable that it is not perfectly true; for the observation was not made with a very suitable Instrument: but

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1805.

as the suns declination, at the time of the Eclipse, was about 27° 15' South & consequently his altitude small, it was best safest to adjust by this meridian, than to limit to the guessing the time by corresponding altitudes of the Sun; on one altitude as practised at Sea. At Noon on the 15th the watch was found to have gained 5 minutes. By several Days observation, previous to the eclipse, the Clock was found neither to gain nor loose time; but as it was not exact the watch at 9 o'clock in the evening it must have been, at the time the observations were made, 1h 52' 30" fast; as appears by the following operation.

h m. h
A. 24 : 5 :: 9 : 1h 52' 30"

5
24 | 45 | 1'
24
21
×60
| 1260 | 52"
120
60
18
12
×60
| 720 | 30"
72
0.

To find the difference of time, and Longitude from Greenwich.

Beginning of the Eclipse at Greenwich by N. Almanac — h m s 6 42 0
Civil time — 1 55 52
Do at Greenwich — 4 46 8

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	h	m	s
Beginning total darkness at Greenwich	7	40	
Do at Deerfield	2	51	19
Diff.	4	48	41

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	h	m	s
End of total Darkness at Greenwich	9	19	
Do at Deerfield	4	30	02
Diff.	4	48	58

End of Eclipse at Greenwich	10	17	
Do at Deerfield	5	30	5
Diff.	4	46	55

Added

	h	m	s	
First difference	4	16	08	
Second Do	4	48	41	
Third Do	4	48	58	
Fourth Do	4	46	55	
Sum	19	10	42	thirds
Dividing	4	4	47	40 30
Clock fast added		1	52	30
Mean diff. of time	4	49	33	00 between Deerfield & Greenwich

This converted into degrees &c of Longitude gives 72° 23′ 15″ for the

Thus 4 hours	=	60°	′ ″
49 minutes	=	12	15
33 seconds	=	0	8 15
		72	23 15

} Longitude of Deerfield West from Greenwich

NB The Eclipse was observed with a pocket Telescope mounted on a Compass staff. The weather very serene & the Thermometer in the morning 10 below Zero. The Atmosphere clear & still

12. Copy of a Letter to a Gentleman who requested information concerning the canker-worm.

1805.

Deerfield February 18. 1805.

Sir.

In compliance with your request I communicate to you, a statement of the ravages and final disappearance of the canker worm, in this town —

The time of their first appearance I am not able precisely to ascertain, but from my best recollection and that of others, of whom I have enquired, it must have been about the year . For several years succeeding this, they appeared regularly in the spring, upon the apple trees of most or all of our orchards. On their first appearance in the spring, which was as soon as the leaves had put out, they were small; but soon arriving to their full growth, they devoured all vegetation upon the trees, which to a spectator at a distance appeared perfectly dry and similar to that of dead orchards. Many of these, composed of flourishing trees were entirely destroyed. In the spring of 1794 vegetation was very forward: the worm appeared as usual and we again despaired of our apples. On the night of the 17th day of May we had a severe frost, followed by a fair and pleasant morning, the Sun shining in full lustre By noon the effects of the frost were fully visible. Indian

-corn, peas, oats, flax, rye, and even the leaves of our most hardy trees were dead. The effluvia from the wood was similar to that from a piece of land newly cut over. Every vegetable which had just put apparently forth, but not one of these worms were to be seen; nor have they since appeared in this town.

The worm here mentioned is commonly called the canker worm *. They are about an inch in length and very slender, not exceeding in thickness a common sewing Needle; and of a dark colour, approaching nearly to a black. Being furnished with legs at each extremety of the body, they are able to move with a considerable dexterity & expedition. This is performed by extending out the body nearly in a right line, and holding fast by the fore-legs, then bringing up the hind part nearly to the fore, forming with the body a kind of semi ellipsis or the conjugate, or shortest diameter, then again extending the body as before, & then alternately so long as they can move.

When these worms came very numerous upon a tree their destructive voracious gnawing might be distinctly heard. On striking a limb with a stick, hundreds of them would spin to the ground upon a small thread or line exactly like that of the Spider. After they had stripped the tree of

* Phalaena Geometra

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its nocturne they disappeared, and were not again seen till the next spring.

1805.

That this worm is produced from the egg of the miller, a small flying insects, is rendered highly probable if not certain, from the following circumstance. Early in the spring & in the edge of the evening vast numbers of them were seen descending the body of the trees in a battering and climbing along their surfaces. The female were found to be loaded with eggs which rendered her descent very slow and difficult. To prevent their descent some of our people encircled their trees with tar, and renewed it every day, which, by its adhesive quality, effectually prevented the ascent of the miller; and thus many orchards were saved from their depredations.—

I observed last summer that these distinctive insects were ravaging the orchard in Sudbury, in this state — and did not in danger of introducing them among us, unless we use some precautions? Does not prudence dictate, that we should avoid approaching too near the trees with waggons & other carriages on their return from Boston? — that we should be

1805 contains of their hay, and see that none of it is put into the waggon, to avoid taking in with it some of these worms? Can they not frequently transported, in this manner from place to place?— I will here conclude for I fear I am wandering from the subject with which I began, by introducing matter foreign to your request. If so, I beg your pardon— I promise to do better another time—

And am Sir, your humble Servant—

E. H—

Mr—

In page 106; Vol. 3d of Doct. Belknaps "History of New Hampshire" it is asserted that the canker worm disappears by the 21st of June. That the miller comes out of the ground early in the Spring. He says "they were not known in New Hampshire till about twenty years past†, and there are some parts which they have not yet reached." He adds "they do not appear every year, but there is no regular interval between their appearances, nor is the cause of the intermission known"—

From the known accuracy of the Doctors History I presume his statements are, in general, correct; tho' there was no, interval, in their appearance at Deerfield, after they first began their ravages, until they were destroyed by the frosts—

† was 32 years

Outlines of Chemistry.

Chemistry, is a science, the object of which is to ascertain the ingredients that enter into the composition of bodies; to examine the nature of these ingredients; the manner in which they combine, and the properties resulting from their Combination.

As a science it is intimately connected with all the Phenomena of Nature; the causes of rain, snow, hail, dew, wind, earthquakes; even the changes of the seasons can never be explained with any chance of success while we are ignorant of Chemistry; and the vegetation of Plants, and some of the most important functions of animals have received all their illustrations from the same source. As an art, it is intimately connected with all our manufactures: The glass-blower, the potter, the smith and every other worker in metals, the tanner, the soap-maker the dyer, the bleacher, are really practical Chemists; and the most essential

improvements have been introduced into all these Arts by the progress which chemistry has made as a science. Agriculture can only be improved rationally, and certainly, by calling in the assistance of Chemistry; and the advantages which medicine has derived from the same source are too obvious to be pointed out.

Part 1. Of Simple Bodies.

All the bodies which are at present reckoned simple, because they have never been decompounded, may be reduced into Six Classes

1 Oxygen
2 Simple combustibles,
3 Metals,
4 Earths,
5 Caloric,
6 Light.

Chap. 1. Of Oxygen.

Take a quantity of nitre, or saltpetre as it also called, and put it into a Gun barrel, the touch hole of which has been previously closed up with metal. The barrel is to be bent

in such a manner, that while the close end, in which the nitre lies, is just into a flame, the open end may be plunged below the surface of the water in an open vessel. At the same time, a glass jar, previously filled with water is inverted and placed on a support lying on the bottom of the vessel of water, so as exactly to receive the end of the Gun Barrel. As soon as the nitre becomes hot, it emits a quantity of air, which issuing from the end of the Gun barrel, ascends to the top of the glass jar and gradually displaces all the water. The glass jar then appears to be empty, but is in fact filled with air. It may then be removed in the following manner; slide it away a little from the gun barrel and the support, and then dipping any flat dish into the water below it, raise it and the end bear it away = The dish must be allowed to retain a quantity of water in it. another jar may then be filled with air in the same manner.

All the airs obtained by this or any other process, or, to speak more properly, all the airs differing from the atmosphere, have in order to distinguish

them from it. Are called Gases. —— The gas obtained by the above process has been called by various names. By Dr. Priestly dephlogisticated Air: by Scheele of Sweden empyreal Air — by Condorcet vital air. — Mr Lavoisier gave it the name now generally united oxygen gas.

Oxygen may be obtained likewise by the following process.

Into a glass vessel with a narrow neck put a quantity of black oxyd of manganese in powder, and pour over it as much oil of vitriol, or sulphuric acid, as will somewhat more than cover it. Then insert in the mouth of the vessel a glass tube, so closely that no air can escape except through the tube. This may be done by covering the joining with a paste made of wheat flour & water, or any other Lute, as substances used for similar purposes are called. A jar is then prepared and placed over this tube exactly as described in the preceding process. The vessel containing the manganese is heated by means of a Lamp or candle, a great quantity of oxygen gas rushes along the tube and fills the jar; and then as many jars may be filled as are required.

Oxygen

Oxygen gas is colourless and invisible like common air. Like it too, it is elastic, and capable of indefinite expansion & compression. A lighted taper burns with in it, with such a splendour that the eye can scarcely bear the glare of light; and at the same time, produces a much greater heat than when burning in common air. Animals inclosed in it will live much longer than in common air.

Atmospherical Air contains about 27 parts in the hundred of Oxygen gas. Two substances will burn in common air, intirely deprived of all the oxygen gas which it contained; but combustibles burn with great splendor in Oxygen gas, or any other gas to which oxygen gas has been added. Oxygen gas then is absolutely necessary for combustion. Nothing can live for a moment in any air or gas which does not contain oxygen mixed with it. Oxygen gas then is absolutely necessary for respiration.

Oxygen is capable of combining with a great number of bodies, and forming compounds.

All substances which are capable of combining together are said to have an affinity for each other: those substances, on the contrary, which do not unite, are said to have no affinity for each other. Thus

thus there is no affinity between water and oil.

Substances differ in the degree of their affinity for each other. A method of representing these different degrees is by Tables, called Tables of affinity. Thus

Water	Oxygen
Spirit of wine,	Carbon,
Common Salt &c	Zinc,
	Iron &c.

The substances whose affinities are to be ascertained are placed at the top of the column, and the substances with which it unites, below it, each in the order of its affinity; the substance which has the strongest affinity next it, and that which has the weakest furthest distant, and so of the rest.

Chap. 2. Of Simple Combustible Bodies.

By combustibles, is meant substances capable of combustion; and by simple combustibles, bodies of that nature which have not yet been decompounded. There are only five in number viz. Sulphur, Phosphorus, Carbon, Hydrogen, and Azot.

Section 1st Of Sulphur

Sulphur is a brittle substance, commonly of a yellow colour, without any smell, and of a weak Rough, unctuous taste. It is generally distinguished by the name of Brimstone.

When Sulphur is heated to the temperature of 302° in the open Air, it takes fire spontaneously and burns with a pale blue flame, and at the same time emits a great quantity of fumes of a very strong suffocating odour. When heated to the temperature of 570°, or a little higher, it burns with a bright white flame and at the same time emits a great quantity of fumes. If the heat be continued long enough, the sulphur Burns away without leaving any ashes or residuum. If the fumes be collected, they are found to consist entirely of sulphurick acid. By combustion then Sulphur is converted into an acid.

The famous Stahl advanced a Theory to explain this process, which was, in a very short time adopted by all the Philosophic world.

according to this Theory, there is only one substance in nature capable of combustion, which Stahl called

Phlogiston; and all those bodies which can be set on fire contain less or more of it. Combustion is merely the separation of this substance. Those bodies which contain none of it are of course incombustible. All combustibles, except those which consist of pure phlogiston (if there be any such), are composed of an incombustible body and phlogiston united together. During combustion the phlogiston flies off, and the incombustible body remains behind. Thus when sulphur is burnt, the substance which remains is sulphurous acid, an incombustible body. Sulphur therefore is composed of sulphurous acid & phlogiston.

This theory has been found, by experiments recently made, unsatisfactory. Mr Lavoisier undertook the examination of the subject, & according to his experiments, the combustion of sulphur is nothing else than the act of its combination with oxygen; and for any thing which we know to the contrary it is a simple substance. ‡ –

Section 2d – Of Phosphorus –

Phosphorus when pure, is of a clear, transparent yellowish colour, but

‡ The phlogistic theory is generally exploded by the late Chemists. Lavoisier says, there is no proof whatever of the existence of any such substance as phlogiston in nature. But Priestly on the contrary asserts the existence of phlogiston and advances arguments in its favour which he thinks cannot be controverted by the antiphlogistians.

but when kept some time in water it becomes opaque, and then has a great resemblance to white wax. Its consistence is nearly that of wax: it may be cut with a knife, or kneaded between the fingers. It is insoluble in water; it melts at the temperature of 90°, and even at 69° it gives out a white smoke and is luminous in the dark; ~~whereupon from whence also~~ that is to say it suffers a slow combustion; so that it can only be preserved from taking fire by keeping it in a very low temperature, or by allowing it to remain always plunged in water. *

By the combustion of phosphorus in oxygen gas, phosphoric acid is produced. The combustion then of phosphorus, like that of sulphur, is nothing else than the combination with oxygen. This acid is composed of 100 parts phosphorus, and 154 oxygen.

Phosphorus is capable of combining with many bodies, the compounds produced are called phosphurets

Section 3. Of Carbon.

If a piece of wood be put into a crucible, well covered with sand, and kept red hot for some time, it is converted into a black shining brittle substance, without either taste or smell

* The process for making phosphorus is described Page 262. Vol. Supp. Encyclopedia Art. Phosphorus

smell, well known under the name of Charcoal. This substance contains always mixed with it several earthy and saline particles. When freed from these impurities it is called carbon.

Charcoal is insoluble in water; it is not affected (provided that all air be excluded) by the most violent heat which can be applied, except only that it renders much harder. When heated to the temperature of 370 it takes fire, and provided it has been previously freed from the earths & salts which it generally contains, it burns without leaving any residuum.

Carbon is susceptible of crystallization. In that state it is called Diamond. The figure of the diamond varies considerably; but most commonly it is a hexagonal prism terminated by a six sided Pyramid. When pure it is colourless and transparent

Charcoal possess a number of singular properties, which render it of considerable importance. It is incapable of putrifying or nothing like wood and is therefore liable to decay through ages. This property has been long known. It was customary among the ancients to char the outside of those stakes which were to be driven into the ground or plunged in water, in order to preserve the wood from spoiling. It takes away the bad taint from meat beginning to putrify, by being boiled with it,

For its further properties see page 8 of this journal.

Carbon enters with a number of bodies, and forms with them compounds known by the name of carburets.

Section 4. Of Hydrogen.

Put into a glass vessel furnished with two mouths, a quantity of fresh iron filings, quite free from rust. Fit into one of these mouths the end of a crooked glass tube: Immerse the other end of this tube below a glass jar filled with water, and inverted into a pneumatic apparatus. Then pour upon the iron filings a quantity of sulphuric acid, diluted with twice its own weight of water, and close up the mouth of the vessel. Immediately the iron filings and acid effervesce with violence, a great quantity of gas is produced, which rushes through the tube and fills the jar. This gas is called Hydrogen Gas.

Hydrogen like air, is invisible & elastic & capable of indefinite compression and dilatation. It is about 12 times lighter than common air. It is incapable of supporting combustion. Animals die in it almost instantaneously. When mixed with oxygen gas it will burn. Of 85 parts by measure

weight of oxygen gas, and 15 of hydrogen gas, be mixed together and set on fire in a close vessel, they disappear, and in their place there is found a quantity of water exactly equal to them in weight. This water must be composed of these two gases, oxygen and hydrogen; and the combustion of hydrogen is nothing else, but the act of its combination with oxygen.

Hydrogen gas dissolves sulphur, phosphorus, and carbon. The compounds are called sulphurets, phosphorets, and carbonated hydrogen gas.

Sulphuretted hydrogen gas has a very fetid odour, precisely similar to that emitted by rotten eggs. Phosphoretted hydrogen gas has a smell resembling that of putrid fish. When mixed with oxygen gas or common air it becomes luminous. Carbonated hydrogen gas comes spontaneously in hot weather from marshes, but always mixed with several other gases.

Section 5 Of Azot.

If a quantity of iron filings & sulphur, mixed together and moistened with water, be put into a glass vessel full of air, it will absorbe the oxygen in the course of a few days; but a considerable portion of air still remains incapable of any further diminution. This residuum has obtained the appellation of azotic gas

The air of the atmosphere contains about 73 parts of azotic gas; almost all the rest is oxygen gas. The easiest method of procuring azotic gas is, to put some sulphuret of potass into a glass vessel full with air, & accurately closed, and then to apply heat to the sulphuret. All the oxygen is absorbed almost instantly. This gas is exceedingly noxious to animals; if they are obliged to respire it they choak dead almost instantly. No combustible can burn in it.

Azotic gas is capable of dissolving phosphorus, and also a little carbon. These two solutions are called <u>phosphorated</u> and <u>carbonated</u> azotic gas. —

From the foregoing it appears, that during combustion, all the combustibles which are at present method simple, combine with oxygen; that no part of them is disengaged. No part of them lost: hence it is concluded that the combustion of these substances is nothing else but the act of them uniting with oxygen; and it appears that in order to produce this union heat is necessary. This may be different according to the nature of the substance. Phosphorus unites with oxygen in the common temperature of the atmosphere; or in other words is spontaneously combustible. —

Chap. 3 Of Metals –

Metals may be considered as the great instruments of our improvements: Without them, many of the arts and sciences could hardly have existed.

1 One of the most conspicuous properties of metals is a particular brilliancy which they possess, and which has been called the metallic lustre.

2 They are absolutely opaque, or impervious to light, even when they have been reduced to very thin plates.

3 They may be melted by the application of heat, and even then still retain their opacity.

4 Their specific gravity is greater than that of any other body hitherto discovered.

5 They are better conductors of Electricity than any other body.

6 One of their most important properties is malleability, by which is meant, the capacity of being extended & flattened under the hammer

7. Another property which they possess is ductility; by which is meant the capacity of being drawn out into wire, by being forced through holes of various diameters. This property has by some been termed tenacity - All the metals do not possess the property of ductility and malleability

8. When exposed to the action of heat and air, most of the metals lose their lustre and are converted into earthy-like powders of different colours & properties according to the metal and degree of heat employed. If any of these calces, as they are called, be mixed with charcoal-powder, and exposed to a strong heat in a proper vessel, it is changed again to the metal from which it was produced. The calces are all considerably heavier than the metals from which they are obtained.

From the experiments of Lavoisier it is concluded that calcination is merely the act of uniting the metal with oxygen.

All the metallic calces may be decomposed by presenting to them substances which have a greater

affinity for oxygen than they have. This is the reason that charcoal powder is so efficacious in reducing them. During the reduction a great deal of carbonic acid gas comes over, which together with the metal is equal to the weight of the calx and the charcoal; it must therefore contain all the ingredients; and we know that carbonic acid gas is composed of carbon and oxygen. In the process, then the oxygen and calx combine with the charcoal and the metal remains behind.

The words calx and calcination are now laid aside and in their stead, the words oxyd and oxydation are used. A metallic oxyd signifies a metal united with oxygen; and oxydation implies the act of that union.

Metals are capable of uniting with oxygen in different proportions, and, consequently of forming each of them different oxyds. These are distinguished from one another by their colour. One of the oxyds of iron for instance, is of a green colour: it is therefore called the green oxyd; the other which is known, is called the brown oxyd.

The metals at present known amount to 21.

These names are gold, silver, platinum, mercury, copper, iron, tin, lead, zinc, antimony, bismuth, arsenic, nickel, manganese, tungsten, molybdenum, uranium, tellurium, titanium, Ammonium.

The first eight of these are commonly called metals by reason of imminent, because they are possessed either of malleability or ductility, or of both properties together; the next seven called semi-metals because they are brittle: But this distinction is now in a manner laid aside.

Of these metals, four are found to magnetic, viz. Iron, Cobalt, Nickel & Manganese.

Section 1. Of Gold.

It is of an orange red, or reddish yellow colour and has no perceptible taste or smell. No other substance can be compared with it in ductility and malleability.

It is capable of combining with oxygen and forming an oxyd of gold. There are two methods of

producing this combination, the application of heat & a solution in acids. When it is exposed to a violent heat and in contact with air, gold absorbs oxygen. But the temperature must be very high; so high indeed that hardly any certain method of oxydating gold by heat is known, except by electricity.

Gold is capable of combining with most of the Metals.—

Section 2. Of Silver.

Silver is a metal of a shining white colour, without any taste or smell. It is the most malleable and ductile of all metals except Gold, & perhaps Platinum. It may be volatilized with a violent heat. It may be combined with oxygen & converted into an oxyd by exposure to a violent heat. By this method it has been converted into a glass as oxyds after fusion, are called, because they acquire a good deal of resemblance in some particulars to common glass.

Little is known at present concerning the oxyds of Silver, nor whether they are more than two, the black & the blue.—

When Silver is melted with sulphur in a low red

heat it combines with it and forms sulphuret of silver.

Section 3. Of Platinum.

The metals hitherto described have been known to mankind from the earliest ages, and have been always in high estimation on account of their scarcity, ductility, and indestructibility. But Platinum, though perhaps inferior to them in some of these qualities, and certainly superior in others, was unknown as a distinct metal, before the year 1752.

Platinum, when pure, is of a white colour like silver, but not so bright. It has no taste nor smell.

It is both ductile and malleable. It has been drawn into a wire of $\frac{1}{240}$ of an inch in diameter. This wire submitted of being flattened, and had more strength than a wire of silver or Gold of the same size. Its specific gravity, after being hammered, is 23.000; so that it is the heaviest body known

Section 4 of Mercury, or Quicksilver

It is of a light colour, exactly like that of polished silver. It has no taste, but acquires a slight odour when rubbed between the hands.

It differs from all other metals in always existing, at the common temperature of the atmosphere, in a state of fluidity.

From experiments made on frozen mercury in Russia, Hudsons Bay, and Britain we know that this metal, when solid, is malleable.

Mercury is capable of combining with oxygen and of forming oxyds. The oxyds of Mercury, at present known are the black, the yellow, and the red. These oxyds may may be decomposed by the application of heat amounting to 1200. The oxygen flies off in the form of gas, and mercury Mercury remains behind.

Mercury, two parts, and flowers of sulphur, three parts, triturated for some time together combine and form a black powder, formerly called Ethiops mineral, and now black sulphuret of Mercury

The combinations of mercury with other metals are called Amalgams. There are various viz. Amalgam of Gold, of Silver, of Platinum &c. -

Section

Section 5. Of Copper.

Copper is of a pale red colour with a shade of yellow. Its taste is styptic and nauseous; and when rubbed it emits a disagreeable smell. It possesses a considerable degree of malleability, though less than silver.

Its oxyds are brown, blue & green. When long exposed to the air its surface becomes covered with a green crust, which is the green oxyd of copper. This oxydation never penetrates beyond the surface.

It is supposed that the different Oxyds are composed of different proportions of Oxygen. The brown contains about 84 copper & 16 of oxygen.

Sulphuret of Copper is composed of 81 parts copper and 19 of sulphur.

Copper combines with Gold when the two metals are melted together. Eleven parts Gold & one part copper compose the current gold of this Country. The current silver coin of Britain is composed of 15 silver & 1 of copper.

Section 6. Of Iron.

Iron is the most useful of all the Metals; and is found in greater abundance than any other.

H

It is malleable and ductile in every temperature; and its malleability is increased in proportion as the temperature augments. Its tenacity is such that an iron wire $\frac{1}{10}$ of an inch contains 450 lb. without breaking. When just broken it is of a bluish colour. It has a stiptic taste, and emits a smell when rubbed. It is insipible in the strongest heats hitherto produced

Iron combines with oxygen very readily. When heated in oxygen gas it burns with great rapidity & splendor and in this manner two oxyds are oxyded. There are two oxyds the grey & brown or red. The brown is known under the name of rust of iron, which is combined with carbonic acid gas.

Sulphuret of iron, formerly called pyrites, is found ready found in many parts of the world.

If iron filings and sulphur are mixed together and formed into a paste with water the sulphur decomposes the water and absorbs oxygen so rapidly that the mixture takes fire, even though buried underground. May not this afford an explanation of the origin of volcanoes? Native sulphur it has been seen to take fire on being moistened with water.

Iron combines with carbon and forms a carbu

net. Carburet of iron has been long known under the names of plumbago & black lead.

Iron also combines with phosphorus & forms phosphuret of iron; to which has been given the name of siderum.

There are 2 great varieties of iron, distinguished by different names; as wrought iron (or simply iron) steel, & cast iron or raw iron.

Steel is so hard as to be unmalleable while cold, or at least to acquire this property by being immersed while ignited into a cold liquid; for this immersion though it has no effect upon iron, adds greatly to the hardness of steel.

It is brittle, resists the file, cuts glass, affords sparks with flint, and retains the magnetic virtue, for any length of time.

By being repeatedly ignited in an open vessel and hammered, it becomes wrought iron.

Cast Iron is scarcely malleable at any temperature - is generally so hard as to resist the file. It is converted into wrought iron by exposing it for a considerable time in a furnace to a heat sufficiently strong to melt it.

wrought

Wrought iron may be converted into steel by
long kept same heats in a charcoal powder in a covered vessel. By this process, which is called cementation, the iron gains some weight.

From a number of experiments it is ascertained that wrought iron is a simple substance and if perfectly pure would contain nothing but iron. But steel is iron combined with carbon. The proportion of this last ingredient has, by Dr Pearson, been fixed at 1/100 part at a medium. Some chemists have called it carburet of iron; but this name seems not to be justly admitted by others. Cast iron is contaminated with various foreign substances, the proportion of which very according to circumstances. These substances are chiefly oxyd of iron & carbon & sometimes silica.

Iron combines with most metals.

Section 7 Of Tin.

Tin is a greyish white colour; it has a disagreeable taste, emits a peculiar smell when rubbed. It is very malleable; tinfoil is about 1/1000 part of an inch thick and might be beat out much thinner.

The oxyds of Tin are grey & white...

Tin does not seem capable of combining with carbon. It combines with most of the metals. Mercury dissolves tin very readily, by being poured on it when melted.

The amalgam of tin is used to silver the backs of glass mirrors

Tin unites readily with copper and forms alloys known by the names of bronze & bell-metal:

There is an affinity between tin & iron as is evident from the action when the latter is dipped into melted tin. This is the method of making tinplate.

Section 8. Of Lead.

Lead is of a bluish white colour, somewhat darker than tin.

It is very malleable & may be reduced to thin Plates by the hammer; but its ductility is very imperfect.

There is a strong affinity between this metal and oxygen. When nitric acid is poured upon it an effervescence ensues, owing to the de-

decomposition of the acid: the lead scozes oxygen from it, and is converted into a white powder, which may be obtained pure by evaporating it to dryness, and then exciting it in pure nitric. This is the white oxyd of lead. It is composed of about 95 parts of Lead & 5 of oxygen. By another process yellow oxyd commonly called massicot, is produced By heating this sufficiently it is changed to a beautiful red oxyd of Lead, commonly called minium, composed of 88 parts Lead & 12 of oxygen. Scheele has shown that there is a brown oxyd of Lead.

Lead combines with Sulphur, and Phosphorus; it also combines with most metals.

Section 9 of Zinc.

This is of a bluish white colour, somewhat lighter than lead. has neither taste nor smell. It has some degree of malleability, for by compression it may be reduced into thin plates. It is more brittle when hot than when cold. From it may be obtained a grey & white oxyd: and also a Sulphuret. Phosphuret & a carburet.

Zinc combines with most other metals. With mercury it combines by fusion, and forms an amalgam suitable for electrical purposes.

Zinc combines very readily with copper and form a compound called Brass. This is of a yellow colour, more fusible than copper. It is malleable and so ductile that it may be drawn out into wire. It is composed of three parts copper & one of Zinc. Pinchbeck, Prince metal or Prince Rupperts metal contains three parts Zinc & four of copper.

Tin & Zinc combine easily. This alloy is often the principal ingredient in the compound called Pewter

Section 10. Of Antimony.

Antimony is of a white colour, with a shade of grey. It has a sensible taste, but no smell. is neither malleable nor ductile, but exceedingly brittle. It melts at 809 Fahrenheit. with a higher heat it evaporates.

The oxyds of Antimony are grey & white. The grey oxid is capable of combining with about 1/10 of Sulphur. This compound by fusion may be converted into glass. It was formerly used in medicine under the name of glass of Antimony.

Antimony

Antimony is capable of combining with most of the metals. Sixteen parts of Lead & one of antimony form an alloy for printing types. with phosphoric glass a phosphuret of Antimony is formed.

Section 11 of Bismuth.

Bismuth is of a yellowish or reddish colour, & almost destitute of taste or smell. It is brittle melts at 460°F. Its oxyds are brown and white. The sulphuret of Bismuth is of a bluish grey colour.

Bismuth combines readily with most of the metals.

Section 12 of Arsenic.

Arsenic when pure is of a bluish white colour, exceedingly brittle. Its oxyds grey & white. The white oxyd of Arsenic is one of the most violent poisons known. The yellow sulphuret of arsenic was formerly called orpiment. This is often found native.

Arsenic combines with most metals and in general renders them more brittle and fusible.

The alloy of copper & arsenic is white and when the quantity of arsenic contained in it is small,

both ductile and malleable. It is called white tombac

Section 13. Of Cobalt.

Cobalt is of a white colour, inclining to a bluish or steel grey. When pure, is somewhat malleable, while cast. It is attracted by the magnet. It is not oxydated by heat without very great difficulty; but it has the property of decomposing nitric acid, and of extracting oxygen by heat much more readily.

The oxyd of Cobalt is of so deep a blue as to appear black.

The combinations of cobalt with other metals have been very little examined.

Section 14 of Nickel

Nickel is of a greyish white colour, and when less pure inclines to a reddish colour. It is both ductile and malleable. It is attracted by the magnet.

Oxyd. Known a garnish.

Little is known concerning the alloys of nickel with other metals.

Section 15 Of Manganese.

This is of a greyish white colour. It is not malleable, and yet not so brittle as to be easily broken. When reduced to a powder, it is attracted by the magnet. When exposed to the air, it very soon tarnishes and assumes a darkish colour, till at last it becomes black and friable. This change is produced by the absorption of oxygen. It takes place much more rapidly if heat be applied to the metal. This substance is the black oxyd of manganese. This oxyd is found in great abundance in nature, though scarcely in a state of purity. From this oxyd is produced the white oxyd of Manganese

Manganese combines readily with carbon by fusion a little is known containing the alloys of manganese.

Cobalt, nickel & manganese resemble iron in several particulars; but they differ from it in specific gravity, malleability and in the properties of their combinations with other substances.

Section 16 Of Tungsten.

This is externally of a brown colour, internally of a steel grey.

oxyd

Oxyd. yellow, called tungstic acid — Alloys with Innenum. —

Section 17 of Molybdenum.

Iron is externally of a reddish yellow colour, but its fracture is of a reddish grey.

Oxyd. white which possesses the properties of an acid. Iron is molybdic acid. Alloys have been examined.

Section 18. of Uranium.

Colour dark grey; internally, inclined to a brown

Oxyd. yellow — Alloys, nothing known.

Section 19 of Titanium

Colour, brown with red and of considerable lustre. It is found naturally crystallized in right angled quadrangular prisms, longitudinally about an inch in length. No acid will dissolve it. It has no affinity for sulphur.

Oxyd. White — —

Section 20

Tellurium is of a white colour like tin approaching somewhat to the grey colour of ~~Zinc~~ Lead. It is very brittle, but melts as easily as lead. It is so volatile as to rise entirely by heat in a white grey smoke; at the same time exhales a disagreeable odour like that of radishes. This smoke is the white oxyd of tellurium.

Tellurium amalgamates with mercury by simple trituration - The other properties unknown.

A new metal has lately been discovered in the red lead ore of Siberia. It is grey, very hard, brittle and easily crystallizes in small needles. The name of Chromium has been given to it, from its property of colouring bodies in a remarkable degree.

General Remarks.

From the foregoing it appears that all the metals are capable of combining with oxygen; that almost every one forms various oxyds, containing different quantities of oxygen, and varying in colour and other properties according

to the proportion of oxygen which they contain.

all the metals except Gould & titanium are capable of combining with Sulphur; and all of them, on which the experiments have been made, can be united with phosphorus. Iron Zinc & manganese will unite with carbon, and perhaps many more of them may have or be found capable of forming carburets.

Much is wanting to render the Summary of alloys complete. Many of them have not been examined; and the proportions of almost all of them are unknown. Neither has any accurate method been yet discovered of determining the affinities of metals for each other.

Chap. 4. Of Earths.

Every body which possesses the following properties is an Earth.

1 Insoluble in water, or nearly so; or at least becoming insoluble when combined with carbonic acid.

2. Little or no taste or smell; or at least when combined with carbonic acid.

3. Incombustible, and incapable, while pure, of being attended by flame.

4 A specific gravity not exceeding 4.9—

5 When pure capable of assuming the form of white powder.

The Earths at present known amount to eight; the names of which are

Lime,
Magnesia,
Baryte,
Strontites,
Alumina,
Silica,
Jargonia,
Glucinia.

Each of the above characteristics are not, perhaps, rigorously applicable to each of these bodies; but all of them possess a sufficient number of common properties to render it useful to arrange them under one head.

Note. Later treatises of Chemistry present principles differing from the above; and in fact the second seems to be inadmissible.

10

Solar Eclipse June 16 1806

This Eclipse was total in New England, and according to the calculation in Naughtons Almanac (fitted to the Lat. & Long. of Boston) was as follows. viz.

	H. M.	
Beginning	9 – 48	Morning Solar time
Middle	11 – 22	
End	0 – 45	afternoon
Duration	2 – 57	

This Eclipse, according to the Nautical Almanac, was only 3°. 28′ Digits on the Suns South Limb, at Greenwich.

	H. M. S.	
Eclipse-time	4 – 36 – 30	afternoon

At Deerfield the day was uncommonly clear, scarcely a cloud to be seen. The Eclipse came on agreeably to the calculations: Some time before it became total the planet Venus appeared South Southwesterly of the Sun. During total darkness the following Stars were seen. Aldebaran about 9° S.E. of the Sun; several in the Constellation

of Orion viz. those in the right & left shoulder & the three in the belt. Syrius was very conspicuous 46° SE from the sun; several others were observed: The planets Mercury and Mars were seen west of the sun a little more north than Venus and between the sun & this planet. The air (~~humidity~~) changed very suddenly; the mercury in the thermometer fell from 72° to 59 and it was so chilly ~~that~~ many people put on additional clothing. It was observed by people who were mowing that the grass became wet with dew. Fowls retired to the roost; Night-hawks left their retirement as at the approach of night, & flew briskly about, and the Whipporwill gave us his solitary song. The Darkness was so great that we could not read without candles; an universal gloom seemed to sit upon the face of nature. ~~[illegible]~~ Some unacquainted with astronomy thot the eclipse miraculous. A kind of twilight surrounded the moon and the rays of the sun shot out from behind ~~the~~ body in every direction, and the appearance was similar ~~to those~~ represented by astronomers in the figures of the sun in their Books. The moon appeared like a dark patch in the heavens. In the North and South the horizon appeared lighter than ~~[illegible]~~ in the East and west; this I attribute to the conjunct ~~[illegible]~~ ~~the~~ were east & west owing to

contiguity of the mountains ~~which~~ The duration of total darkness was, as nearly as we could determine by clocks and watches, 4½ minutes. When the moon left the west limb of the sun, the darkness disappeared instantaneously (as it does on bringing a candle suddenly into a dark room) and the refulgent orb of day threw off the gloomy the pleasing sadness in which we had been enveloped. —

The following paragraph on the course of the Shadow occasioned by the eclipse is taken from the New England Palladium into which it was ~~inserted~~ from a New york Almanac.

"The centre of the shadow enters upon the globe in the Pacific ocean about 15° to the westward of the Sandwich islands Lat. 29°-25' N. Long. 65°-W. from Philadelphia, from thence it takes its course eastward inclining to the north, passing through new Mexico & ~~Louisiana~~ - crosses the Mississippi about 80 miles above its confluence with the Missouri and passes on to the eastward through the state of Ohio, the north part of Pennsylvania and a part of N york, crossing Hudsons River about 40 miles to the south of Albany - enters into Massachusetts about fifteen miles north of the Connecticut Line, and passes through Northampton,

Worcester and Boston. Thence it takes across the Atlantic, bending its course towards the south, enters upon the continent of Africa, a little to the South of the Canary Islands, then with a S.E. course passes thro' the western part of the great desert of Barbary in the country of Nigritia where it finally leaves the Globe, the sun setting centrally eclipsed Lat. 12° N° Long. 00. 39. E. Allen"

The Sun's Longitude at the time of the Eclipse was S. 2° 26' 45" 17
Declination — 23° 21' North

Observations on this Eclipse were made by Astronomers in various places, all of which I have noticed any account, make the duration of total darkness nearly double to that given by calculation. It was not the Diameter of the dark Shadow greater than was supposed by the calculations?

II

To find the greatest Azimuth of a Circumpolar Star, from the Meridian having the Lat. of the place and Stars polar dist. given.

Proportion.

Co. Sin. Lat. : Rad. :: Stars polar dist (or 90° Decl.) : Sin. of its greatest Azimuth.

Lat —

Let it be required to find the greatest azimuth of the north polar Star at Deerfield Dec^r 14 - 1806.

Should be 42.. 32 } Lat. of Deerfield 42° 26'.13 (see page 2^d Journal)

Declination of the Star for beginning of 1800 = 88° 14' N. (See Bowditch Table)

Add annual variation for 6 years = 0 - 1. 57,6

True Declination = 88 : 15 - 57,6

Subtract from = 90.

Cosine Polar Distance = 1 : 44 : 02.4

	Logarithms
Co. Sin. Lat 42° 26'	9. 826809
: Radius	10. 000000
:: ÷ Polar Dist. 1° 44' (Sine)	8. 118069
	18. 118069
	9. 826809
: Sine greatest azimuth 2° 21' =	8. 61260

To find the time when the Star has its greatest azimuth.

	H. M. S.
Sums Rt. Ascension Dec^r 14. 1806 at Greenwich at noon	17.. 24 .. 40,5
Under the daily variation of sums R. A. + against Long. 72 - 33 in Bowditch's 29th Table is 54 seconds for additn	= = 54
Sums R. A. at noon at Deerfield	17 : 25 - 34,5

	# M. S.
Stars R.A. Ascension (Table II Bowditch)	0..52..15
Annual var. 12,5 X 6 = 1..15 added	1..15
Stars R.A. ascension 1806	0-53-30
Added 24 Hours (Stars R.A. always less than Suns)	24....
Subtract Suns R.A. Ascension	24-53-30
	17..25..34,5
The Star will come upon the meridian above Pole	7-27-55,5 correct
This Star makes an apparent revolution round the Pole in 23-56 (nearly) consequently 1/4 of Revolution in	5-59 to be added
Greenwich Encampation mark of Meridian at	13-26-55,5 on

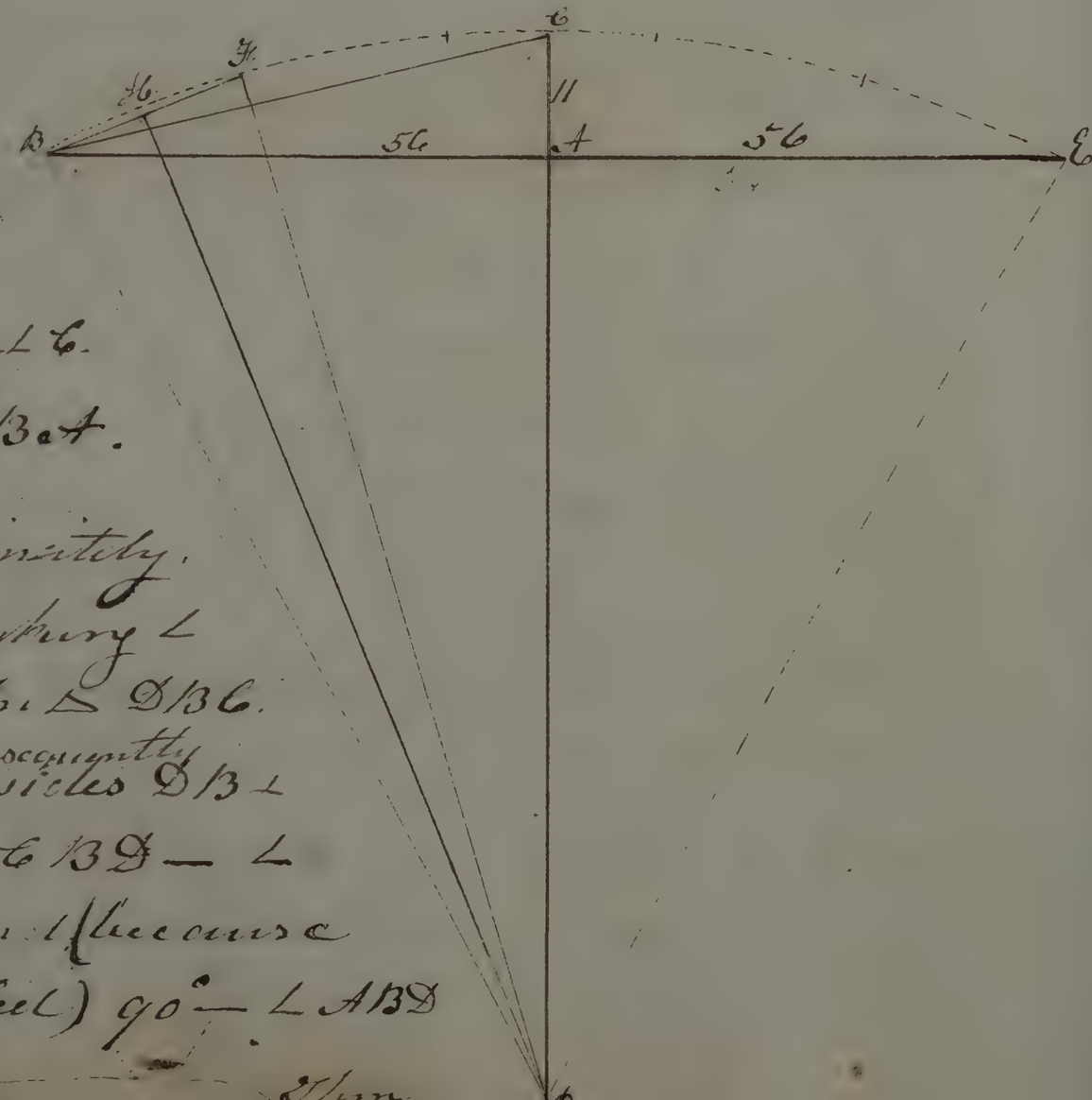
1-24-55,5 afternoon. Hence it appears that the North Pole Star will bear N° 2-?110, from the true meridian at
M. S.
1..24-55,5 on the night of the 14-Dec-1806 at which time it will be at the west end of the horizontal diameter of its diurnal circle; but refraction will cause it to appear about one minute higher. Note the Lat. wch is towards should be 42-32-32.

12.

The Bridge built over Deerfield River at Cheapside, in 1806, consists of three Arches of a circle; the chord of each is 112 feet and the versed sine 11 feet; when the timber was framing the Engineer requested me to give him the D. of a piece of timber which should constitute one

one fifth of one of those arches. The process to find this is as follows.

Make a Rightangled Triangle ABC; the base AB = 56 = half the chord of the Arch; AC = 11 = V.S. of the arch. and BAC the right angle.



In the △ ABC Hence are two sides given to find ∠ C: thus

AC : Rad. :: AB : Tang ∠ C.

and 90° − ∠ C = ∠ CBA.

Prolong CA indefinitely, and draw BD, making ∠ CBD = ∠ BCD. In △ DBC. ∠ C = ∠ CBD and consequently sides DB ∠ DC equal *. Hence ∠ CBD − ∠ CBA = ∠ ABD, and (because △ DAB is rightangled) 90° − ∠ ABD = ∠ ADB.

Now to find DA the proportion is, Rad.: BA:: Tang. ∠ ABD: AD. and AD + AC = DC the Radius of the Circle of which the arch is a portion.

The ∠ BDC (= ½ arch) × 2 = arch BCE; and $\frac{\text{BCE}}{5}$ = ⅕ of arch BCE. From B set off ⅕ of the arch BF; draw the chord BF; bisect BF in H and draw DH & DF, then ∠ BDF = ⅕ of the arch; and ∠ BDH = ½ BDF. In the Right angled Δ BHD, ∠ BDH is given (= ½ BDF) and 90° − ∠ BDH = ∠ DBH.

To find DH it must be Rad.: DB:: Sin. DBH: DH. Then DB (= DC) − DH = the Vs. of ⅕ of the arch which was required.

The calculation by Logarithms is as follows.

AC 11 ———	1, 04139
: Rad. ———	10, 000000
:: BA 54 ———	1. 74818
	11 74818
	− 1 04139
: Tang ∠ C =	10. 70679

$$\angle C = \frac{90^\circ}{70.53}$$

$$\angle CBA = 11.07.$$

$$70^\circ 53' = \angle CBA$$
$$-11.07 = \angle ABD.$$
$$\frac{90^\circ}{67 - 46} = \angle BDA$$
$$22 - 14 = \angle BDA$$

To find

To find DA.

	Rad. —	10,00000
	: AB − 56 —	1,74818
	:: Tang ABD = 67..46 =	10,38852
	: DA = 137 =	12,13670

AC = 11
DA = 137
148 = Radius of the Circle of which the arch is a portion.

ADB = 22°..14′ × 2 = 44°..28′ = Arch BCE.

5)44°..28′(8°..53′..36″ = ∠ BDF.
− 4..26..48 = ½ ∠ BDF = BDH.
90
85 33..12 = ∠ DBH

To find DH.

Rad. — —	10,00000
: DB = 1776 inches =	3,24944
:: Sin. DBH = 85..33 =	9,99869
: DH = 1770 =	13,24813

DC = 148 feet
× 12 inches
1776 inches in 148 feet
DH = 1770
6 inches

Hence it appears that the vs of 1/5 of the arch 6 inches: or closely calculated it will be found a little less. viz 5,36 inches

Thermometers.

Thermometers may be reduced to the corresponding degrees of any of the others, by means of the following simple canons.

1 To convert the degrees of Reaumur into those of Fahrenheit.

$$\frac{R \times 9}{4} + 32 = F.$$

2. To convert the degrees of Fahrenheit into those of Reaumur.

$$\frac{F - 32 \times 4}{9} = R.$$

3 To convert the Swedish degrees into those of Fahrenheit.

$$\frac{S \times 9}{5} + 32 = F. \text{ And } \frac{F - 32 \times 5}{9} = S.$$

Note. R = degrees of Reaumur, F. those of Fahrenheit, and S those of the Swedish thermometer, in the above canons.

Lavoisiers Elements of Chimistry, quoted in Ency. Art. thermometer. Also Appendix No 4 in Lavoisier.

Note Fahrenheit numbers 212. from freezing to boiling point of water; Reaumur 80 from freezing to boiling point; and Swedish from freezing to boiling point 100.
Fahrenheit generally used in this Country.

On the Winters of New England, compared with other Countries.

The winter of 1806-7, throughout Canada & the Northern parts of the United States has been remarkably cold and, except in the most elevated parts, very little snow has fallen; the quantity at Deerfield did not exceed inches, after the winter set in; if we add to this 6 inches, the depth of a considerable fall of snow on the 30th of October which very soon melted the whole amount will be inches, which is inches less than the quantity which fell last winter.

On the Green mountains, between Wilmington and Bennington, the first part of march I found the snow 3 feet deep while at Bennington there was not a sufficiency for sleighing, the Roads very low the most part. Bennington is situated in a valley at the west side of the mountain and within about a mile of it; the difference of the temperature of the air in this valley and that of the mountain is very striking. In the latter part of winter when the weather becomes so warm as to melt the snow & moisten the ground and spring seems to be coming in, the

mountains has the chearey aspect of January - the air is keen and the traveller who departs from Bennington comfortably dressed, finds it necessary to put on additional cloathing to avoid the frost. This vicissitude frequently continues on the mountain till vegetation is considerably advanced at Bennington. Governor Tichenor informed me he had seen Peach-trees in full blossom at the latter place, when the mountain was covered with snow several feet deep and every thing grimly congealed as in the midst of Winter. This difference in the state of the air at Bennington and on the mountains, is the cause of sudden and strong gusts of N E wind, from the latter. These are sometimes so violent as to overset buildings; and the farmers at Bennington [illegible], in order to avoid this, in erecting their Houses or barns, find it necessary to place them with the gable sides to the west. At Deerfield we are from the easterly quarter. At Deerfield we generally have more snow than in the country east of the mountain: this must be owing to other causes than elevation, above the Ocean, for the difference in this cannot be great. Perhaps chearey to the calcareous nature of the soil at Bennington & the Regions near the mountains north & south of that place which abound in Limestone. This increase of the quantity of snow in the south contiguous to the Hudson, which must be less elevated than Bennington & other places near the mountain, renders this conjecture improbable. But, to return from this Digression. In the month of February we had several sudden storms which

which included violent gusts and storms of the Ocean, and great damage was sustained by the enormous quantities of ice both above; Mills, Dennis & Bridges were swept off in all parts of New England, particularly in Connecticut. It is not recollected that the destruction of property in one winter has equaled this since the settlement of the country. Before these rains the springs were very low and it was extremely difficult for the farmers to find water for their cattle. The snow was very much full in the forepart of winter mixed with the rains and soon congealed into a solid mass of ice; this continued on the ground through the winter and was one cause of the floods, for it prevented the rains from penetrating the ground in any considerable quantity and facilitated the discent of the water into the Rivers.

The following exhibits the Days of continued frosts

December	13
January	18
February	8
March	3
Total	42

We have several extremely cold Days. The 26th January was perhaps as cold as any has been known in this Latitude. At sunrise the morning was 10 below Zero; at 2 o'clock P.M. 3 above, and at 10 in the evening 14 below. The weather became more moderate in

the night; and at sun rise next morning the mercury stood at 6° below Zero. The Day throughout was very clear, and almost calm; the sun shone with full lustre, but it had very little effect on the south of buildings, on which the sun's rays fell perpendicularly. The day following was very cold; the mercury stood at 10° above at 2 o'clock P.M. but the day was cloudy, and a little snow fell.

Observations on this Day (26) were made in various parts of N England the following Shew collected from various sources

Cambridge ‡	13°
Hollowell (Me) +	33°
Portsmouth ⊕	9°
Boston ⊕	4°
Smithfield R.I. ⊕	12°
Hartford ⊕	6°
Warwick ⊕	15°
Deerfield —	10°

The observations marked thus ⊕ are taken from Dod Adams Register and were made at sun rise, as was that at Deerfield. Those made at Cambridge & Hallowell it is presumed were made at the same time, though the time of Day was not mentioned.

By comparing the above observations it will be seen that the mercury differed considerably in different places. Some allowance must undoubtedly ought to be made for the difference of the thermometers and for the manner in which they were

‡ Centinel. + Chronicle. ⊕ Adams Register

exposed. But these allowances will not be sufficient to reduce the thermometers to the same temperature. Hence it is evident that places situated at no very great distances from each other differ essentially in their temperature; (It is found that the temperature of a Country is not regulated wholly by its Latitude, but by other circumstances; such as its height above the level of the Ocean; its vicinity to large tracts of uncultivated land, Lakes, seas, or marshes - the position and height of its mountains; the direction of its winds, and the quantity of evaporation from its surface and probably many other causes unknown.)

About the last of February one of my neighbours found it necessary to repair his aqueduct which conveyed water to his barn [illegible] for this purpose it was necessary to dig through the frost; I improved this opportunity to measure the depth and found it 3 feet in level sunny land. We are informed that the frost does not penetrate the Earth in Russia to a much greater depth than this.*

The ice broke down our River was of an unusual thickness I measured a block which was 2 feet 9 inches thick; this was very regular & both the two surfaces were pretty plain & parallel; but in general it did not exceed 20 inches.

The

* Tooke's Catherine vol. 1 - page 8. Dublin 1800

The lowest descent of the mercury observed at Deerfield, this year was in the evening of the 26 Jany and the morning of the 9th of February when it stood 14 below Zero. The mercury has frequently descended lower that this. ~~in the mercury~~ January 16 1805 at sun rise the mercury was 0/18 Jany 18 1806 it was 23° in the shade for some time after ~~the~~ sun rise. If the observation made at Hallowell as before mentioned be correct (33°) the mercury was ~~but~~ ~~little~~ a few degrees above the point of congelation which is fixed at 40 below Zero. This is ~~the utmost extent~~ said to be the "ultimate degree of cold which the mercurial thermometer will measure" The mercury will descend lower ~~than this~~) but it falls suddenly & by starts 100° at a time. (see Dr Blacks experiments, mentioned Encyclopedia Vol. 5. Art. Cold) By the observations of Mr Fowler made at Windsor Vt* it appears that the mercury stood 24 below Zero at Sun rise on the 18 Jany 1806. This is one degree lower than it was at Deerfield the same time.

At Frederic-Town on the River St John in New Brunswick I was informed by a gentleman belonging to the Engineers, that mercury had been known to congeal at that place. Fredericton is about Latitude , & is situated on the West bank of the River on a plain but a few feet above the level of the Bay of Fundy. At Rutland Vt. at the foot of the

* See Adams Register No 14

66

of the green mountain Dr Williams has observed the morning at 27°. At Noon on 9th February that year the thermometer was 20° Seventeen years ago says my informant it fell 46° Farenheit

From the foregoing statements it appears that the Winters of New England and Eastern parts are extream by cold; and in company there with observations made in Europe we find that our winters are colder than those of corresponding Latitudes in Europe & even much higher Latitudes and indeed very little short of those of Russia

The greatest degree of cold since the building of the City of Petersburg (nearly by Reaumur 32°, the 6th of January 1760 was again in January 1799.*

The average cold in the following Months is deduced from observations made at the Imperial Academy of Sciences at Petersburg viz:

	Reaumur	Farh
November	11° =	
December	18° =	
January	22° =	
February	19½ =	
March	14 =	

* Jacobs Voyages

At London, Lat. 51° 32′, in the winter of 1801-2 the highest and lowest range of the Thermometer was as follows

		highest
November		
December		
January	17	47
February	31	49
March	35	53

In the winter of 1803-4 it was as follows

	lowest	highest
November		
December	21	54
January	30	51
February	26	40
March	27	51

In the winter of 1804-5 as follows

November		
December		
January	28	40
February	23	47
March	34	50

For Continuation See page —

A short once easy Rule for finding the equation for the change of the suns declination when equal altitudes are used to regulate a clock or other time keeper. By Andrew Ellicott Esqr. From the Philosophical Transaction Vol. 6. page 24 (N° 4)

For the First Part

Find the Suns Long. declination, and the change of declination for 24h at the time of the observation, likewise find the proportional part of the change of declination for the half interval between the forenoon and afternoon observations, then take the proportional Log. answering to the change of declination for the half interval (increasing the index by 10) from which take the Log. cosecant of the hourly angle; to the remainder add the Log. cotangent of the Lat. of the place of observation, and take out the minute and second from the P. Log. answering to the sum (10 being deducted from the index) which converted into time will give the first part of the correction and will be declinant, in north Latitude, when the suns Long. is 0.1.2.9-10 or 11 signs, and additive in the other signs; but the contrary in South Latitude.

For the Second Part

Go the P. L. of the change of the suns declination during

the half intervel, add the Log. cotangent of the suns declination, from that sum deduct the Log. colangent of the horary angle. - Take out the minute & second from the P.Ls. answering to the remainder, which turned into time will give the second point of the correction; this is common to all Latitudes, and must be attended when the suns Long. is 0. 1. 2. 4. 7 or 8 signs, and deducted in the others.

Example

Suppose, the following equal Alts. were taken in Lat. 39°. 56' N. when the Suns Long. was 4ˢ. 15°.

	h. ′ ″
A.M. 8ʰ. 32. 20″	3 - 32. 24
Added	12 0 . 0
	15 - 32 - 24
Deduct forenoon observation	8 - 32. 20
	2) 7 - 00 . 04
half interval	3 - 30. 02
Add forenoon observation	8 - 32 - 20
Suns centre on the meridian nearly	12 - 02 - 22

For the Correction

The suns declination answering to 4ˢ. 15° of his Long. is nearly 16°. 21' and the change of declination at the same time about 16'. 55″ in 24 hours; 2'. 28 during the half interval.

Thus by the Rule

Change of declination during half interval 2-28" P.L. ——— 11,8631. +10.

Horary angle 52°-30 Log. cosec. — 10,1005

1,7626

Latitude 39°-56' Log. co.tan. + — 10.0772

P.L 1,8398 = 2'-36" =

10"-24"' in time, being the first part of the equation, and additive, by the rule.

For the second part.

Change of declination during the half interval 2'-28" P.L. of ——— 1.8631

Suns declination 16°-21' log. co.tang. +10.5326

12.3957

Horary angle 52.30" log. co tang. — 9.8850

P.L. 2.5107 = 0'-33" =

2"-19"' in time, being the second part of the equation, and declinative by the rule.

Application

	h	'	"	"'	
Apparent time of the suns centre on the meridian	12.	2.	22.	0'''	by clock
First part of the Equation + 10". 24"'					
Second do —— 2. 12			+	8-12	
Suns centre on the meridian ——	12.	2.	30.	12	

Improved method of Projecting plane angles by Robert Patterson. From the Philos of Trans Transactions vol 16 page 29 art. 6.

"The Rad. of a circle of which the chord of any given arch shall contain just as many equal parts of the radius as the arch contains degrees, is easily calculated. The one I have chosen is that of a circle of which the chord of an arch of 25 degrees shall equal 25 parts. This Rad. is 57 3/4 very nearly. Now it will be found that of this circle the chord of any arch under 30 degrees will never vary more than 1/12 part of an unit from the number of degrees in that arch. Hence to lay down any angle of any given number of degrees and parts you have only to take with a pair of compasses, from any line of equal parts, 57 3/4 and with this Rad. describing an arch ~~apply~~ apply them from the same scale as the chord of the angle required, if not exceeding 30 degrees; (calling each part as ~~1~~ equal thirtieth of the line a degree) and the two radii drawn from the center to the points of intersection on the arch will contain the angle required. If the given angle exceeds 30°, first apply the radius (which equals the chord of 60°.) and then take away from the line of equal parts the chord of the difference between 60° and the given angle, apply it on the arch from 60

within parallels or backwards according as the given angle is greater or less than 60 degrees.

The meaning of an angle being only the reverse of the former will consist in describing an arch round the angular point, as a centre with a rad. = 57 3/4 and then applying the chord of this arch (or instrumental between the two lines, including the angle if not exceeding 30°, to the same line of equal parts from which the radius was taken. But if the angle exceed 30° you must first apply the radius, and then measure the arch of excess or defect above or below 60 as above.

Though the above method of measuring angles will never be liable to an error of more than five or six minutes of a degree, which in practice may be safely neglected, yet even these small errors may, when thought necessary, be allowed for as follows—

From 1 degree to 21 } call the L 5 minutes { more / less } than
From 28 — to 30 }

A measure and if this allowance be made the error will scarce ever exceed one minute.

The diagonal scale of 20 parts to an inch will be a very convenient size for the above purpose. On this the half inch is divided into 100 = parts; each of which will correspond to 6 minutes.

1811 March 27 } Perambulation of an Old Line.

This day, with my nonius [or Vernier] compass, perambulated the divisional line between the first and second Division of inner commons in Deerfield. Began at old marks upon trees in the fence between the Land of Orlando Ware and Jonathan Hoit 2d. (Mr Ware's lot is No.   in 2d Division) an run S. 16° W. by Needle: marked trees were found in my course west of Roswell Lanfares land; and a large white oak, now hollow, with an old marks upon each side, about 20 Rods north of the road leading to Shelburne was found to be exactly in my line. Continuing through the cleared Land to the woods South of Mr Paul Hawks pasture trees marked were found near my course. At the Road leading to my Still-water pasture I struck, exactly a large white oak, with ancient marks; continuing to the mine, found, very near my line, several piles of stones which seemed to be ancient corners. On the rocks near the mine, at the end of my course, made a pile of stones, and marked, with my pocket knife, a white oak tree with a spot or blaze = D. Line. on the NW. side. This oak is about 8 feet S.E. of the pile of stones.

Note. The above is the westernmost line called the Dimon Line. The Florence Line No. 2 No. and Needle ...

No 18.

Course of the lines of the lots in the 2d Division of lots (inner commons) near Mr Zeck Hawks as run April 9-1811, W 2°-30' S. This coincides with the lines of Frederick Boyden's lot. A lot further north, run for Israel Childs, is W 2°.40' S. The division line East of Boyden Lane was N 3° W.

19

August - 1811. Perambulated the Division Line between the 1st & 2d Division of inner commons, from a corner of a lot North of Mr Jones to the NWL of Jonathan Hoyts 3d Lane; found the Course S 16 W. (needle) Exactly coinciding with the line further South, ~~See~~ page 73.

July 17-1815. Perambulated the Division line between 1st & 2d Division of inner commons from SWL Phillips 1st to to the walnut in said line North of Nathan Robbins' barn. Course N 16° E; [illegible] about one Rod west of walnut (my [illegible] Compass. N end needle, flower de Lis North)

By calculation the [illegible] course is N 16°.10'.40" E.

Hence the Course of the lines of the lots (being at L with the Division Line) is E 16°.10'.40" S by the needle as said Compass.

Note. [illegible] compass mentioned page 73 [illegible] needle & Line run near noon.)

In 1831 these Division Lines were found to be N 18° E nearly; [illegible] that the needle has moved to the east about 2°, or the variation is [illegible] meridian.

1811.

Literary ~~and Philosophical~~ Intelligence.

1 W. & W. Ward No 4 City Hotel Broadway N York, advertise "Art of War including the duty of Officers on actual service and the principles of Modern Tactics, Illustrated with numerous plates (Oct 26-1809) 4 Vols. 8vo.

2 Wm Wells Boston. Officers manual in the Field with many plates. Strangee's Field Fortification 1 Vol. - Warnery's Remarks on Cavalry 1 Vol. - Vince's Practical Astronomy - Mackay on Longitude 2 Vol. Mackays Complete collection of mathematical Tables 1 Vol. - Davis's Complete Treatise of Land Surveying 1 Vol. Huttons mathematical Tables 1 Vol. - Nicholson's Journal of Natural Philosophy 1 Vol.

3 European Magazin 1805 (Nov.) Reviews Military Memoirs relating to campaigns, battles & stratagems of war, ancient and modern: Extracted from the best authorities, with occasional remarks. By William Thompson, L.L.D. Second Edition revised and enlarged by James Glenie Esq F.R.S. (London & Edinburgh) and formerly an Officer in his Majesty's Corps of Engineers. 1 Vol. 8vo pp. 642. (1804) Highly approved by the Reviewers.

A good work

4. Edouard Pouchet & Joseph Delaplaine No. 466 (north second street) Philadelphia have published Prospectus of the Edinburgh Encyclopaedia conducted by David Brewster L.L.D. &c. with the assistance of a large number of English Gentlemen, distinguished in science and Literature. A considerable number of American Gentlemen of science and Literature have offered their assistance to the Editors. The works will be comprised in 12 Vols. 4to to contain between 800 & 900 pages each; with plates executed in a superior manner, by the first artists in this country. A half vol. to be published every three months beginning January 1-1812. Price to subscribers 4 dollars for each half Vol.

5 Bronson's Select Reviews for June 1809 contains Essays on the theory and practice of the Art of War, including the duties of Officers in actual service, and the principles of modern Tactics. Chiefly translated from the best French & German writers. By the Editor of the military mentor. In 3 handsome Vols. with numerous engravings English price L1.16 in Boards.

6. Robert M. Dermott, New York. Proposes to publish by Subscription The History and practice of finding the Longitude at Sea or Land; to which are added various methods of determining the Latitude of a place, and the variation of the Compass: with new Tables. By Andrew Mackay LLD. FRS. In 2 Vol 8vo. improved and enlarged. (April 1809 Bronson) Price to subscribers, in plain binding $7 dollars.
NB The 3d Edition of this work is announced in an English Catalogue, with improvements &c at £2-12-6 Sterling.

7 Pinkerton & Conrad N. 93 Market Street Philadelphia, have issued Proposals for publishing by subscription A General Collection of Voyages and Travels: Forming a complete history of the origin and progress of discovery, by sea and land, from the earliest ages to the present time. Preceded by an historical and critical catalogue of books of voyages and travels; and illustrated and adorned with numerous engravings. By John Pinkerton, author of the modern Geography. The work to be comprised in 10 or 12 Vol 4to. (between 800 & 900 pages each Price to subscribers 8 dollars per Vol.

Nov 1-1809

Military Intelligence

Dec 26 1809 — E. & J. Backus No 43 State Street Albany offer for sale Observations this New and Elegant General attlas, containing all the discoveries to the present time (63 maps) 4 to

9 — Inskeep and Bradford, No 128 Broadway, New York advertise the following military Books. viz

April 1810 — Practical observations on the Errors committed by Generals & Field officers, commanding armies & detachments, interspersed with various instances of judicious disposition and gallant atchievment, from the year 1743 to the present time: to which is added a new system of fortification. with plates — By William Armstrong adjutant General of the English forces.

Remarks on Cavalry; by the Prussian General of Hussars Rosenberg; with numerous plates 1814

Cunningham's Duties of the British Army, with reflections on the science and principles of War, with

more view, the evolutions of the Battalion, brigade & line, and pointing out their combinations with each other, and uses in actual service.

Luffman's Select plans of the principle cities, harbours, forts &c in the world.

Instructions and regulations for the formation and movements of Cavalry. 1 Vol.

Hutton's Course of Mathematics 2 Vol. 8 vo.

Jones Certificate Time tables, for Sea & Land Service.

Robbin's Principles of Gunnery —

The Spirit of the modern System of War, by a Prussian General Officer: with a Commentary by C.M. de Martemont Captain in the French Cavalry 1 Vol 8 vo.

Haley's Military Observations, with plates.

Dytton's military Laws & practice of Courts Martial

M. Arthur's principles & practice of Naval & military Court martial 2 Vol 8 vo.

Literary Intelligence

Manoeuvres of the Horse Artillery by General Hoscinshovel

Muller's Fortification, regular & irregular. (1 vol 8vo)

Practical Cavalry, for the use of Military Schools

Remarks on the Medical Arrangements necessary to be observed in Camps.

James' Regimental Companion, containing the relative duties of every officer in the army. 2 Vol. or 4 Vol.

General Orders, and observations on the field exercise of Infantry.

Instructions for Hussars and Light Cavalry in time of war. 1 Vol.

The duty of Infantry Officers in Camps, garrison & ~~on~~ shipboard. &c &c By Thomas Reade.

Jervey's Duties of Light Infantry in the field.

Herries's Instructions for Volunteer Corps of Cavalry

Russell's Instructions for the Brigade, and of Infantry the eighteen manoeuvres, 1 Vol. 8vo.

The defence of Pickets, relative to the service in the Field

Treatise on reconnoitring. —

Sines Military instructor, for non commissioned officers & soldiers.

The Brigade Major's Assistant, containing rules, rules and regulations for the guidance and discharge of the duties of that Station.

The Duties of Etats Majors in the French army.

10 — 11 & 12 Wood New York offer for sale The Regimental Companion, containing the relative duties of every officer in the army 2 Vol. & Supplement 1 Vol.

April 1810 Whitmore's General System of Tactics and military arrangement, with observations on the practice of Light Infantry, Field Fortification and the Petite-Guerre. 1 Vol.

Hints for Non commissioned officers 1 Vol.

A treatise upon the Duty of Light troops - By Col Von Ebwalde. 1 Vol.

Library Intelligence

A Treatise on Military Finance 2 vol.

A Military Chatechism for young Officers.

11 Works found in various Catalogues of late date viz.

Observations on the Exercise of Platoons & movements of Light troops in general by Sergeant Weedenbourne 1 vol.

Landman's Field Engineers Vade mecum 1 vol (7/ English)

The Exercised Officer; or Instructions by Genl Francis Winisset 1 vol. (5/ English)

The first Principles of Field Fortification. By Lom Nicolay

Aldington's Essay on the Construction of Light artillery for acting with Infantry, and a description of the Loaded Spear, recommended for the near Ranks.

Gilberts military Works ——— or Essays 2 vols.

The British Military Library with about 100 plates. 2 vol. 4to. from £4-14 to £5-5 English a Superb & useful work.

The Index of Wars, being an alphabetical digestion of the principal naval and Military Engagements in Europe, Asia, Africa and America. Particularly of Great Britain and her allies, from the 9th Century to the year of 1801. Consisting of

Actions	Descents	Sea Fights
Attacks	Defeats	Storms
Attempts	Engagements	Sieges
Battles	Expeditions	Repulses and
Blockades	Invasions	Skirmishes.
Bombardments	Reductions	

Selected from the best Historians and Journalists and adjusted from the greatest authorities. - Interspersed with concise descriptions of the Seasons and places, the subject of each action. - 2 Vol 4 to. Price at Boston $16.67

Practical System of the Art of War; translated from the German of G Venturini 4 vol 4to. illustrated with numerous Plans. This work is recommended in the strongest terms by the King of Prussia, Prince Duke Charles & others. Is to be published in London in 1800

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Literary Intelligence &c

Epitome of military Events with maps & plates translated from the French original printed at Hamburgh 2 Vol in one

Vegetius Ancient Art of War, translated by Capt Clarke 1 Vol

~~Mr~~ Maurice Peysegers Art of War (old)

Memoirs of the Marquis Feuquieres 2 Vol.
Military memoirs, by Gl Guischant. } Millwood's
Do do of the Duke of Berwick 2 Vol }

NB. For a further list of military Books referred to may be had at T. Egerton's Catalogue military Library Whitehall London

12. J. Riley (New York) has just published "Travels or an inland voyage through the State of New York, Pennsylvania Virginia, Ohio, Kentucky and Tennessee; and through the territories of Indiana, Louisiana, Mississippi and New orleans; performed in the years 1907 & 1808. By C. Schultz Junr Esqr. with maps & plates. 2 Vol

This work is well to be a valuable acquisition to our Libraries. The Style is free and easy, the philosophical deductions forcibly illustrated, and the whole interspersed with a fund of smart useful information and original anecdote. The work is illustrated with four large and valuable maps, and embellished with some interesting drawings; and contains the best description of the falls of Niagara, and the ancient Fortifications at Marietta, that have been published.

13 Messrs Wait & Co. Boston, have in the press Bigland's view of the World. 5 Vol. 8vo, price $2,25 per Vol. The work commenced in June 1811. one Vol to be published each month till the whole are completed. This work is esteemed and connected, so far as my knowledge extends, by Best Moses.

14 Bradford and Inskeep Philadelphia, have issued proposals for publishing by Subscription Memoirs of the War in the Southern Department of the United States. By Henry Lee Lt Col.t of the Partizan Legion during the American war. 2 Vol 8vo about 300

Sept. 1811

pages each. Price to subscribers 3 Dollars a Volume. The work is to be printed on the best paper, and with the neatest type; each Vol. embellished with heads and maps. The form of the work has enabled the author to enter into a more minute narrative than is admissible in general history, and to bring into view a greater number of meritorious actors, who, though in subordinate stations, displayed a zeal, fidelity, and skill, which ought forever to embalm their names in the memory of a free and grateful people. The style is clear and comprehensive, and the narrative interspersed with interesting anecdote and moral political, and military reflections naturally springing from and appositely connected with the subject. On the whole the publishers do not hesitate to say, that the patriot will be delighted, the statesman informed, and the volume instructed by the perusal of this work; which in every point bears the ingenious stamp of a Putnam Solution, and cannot fail to interest all who desire to understand the causes, and to know the difficulties of our memorable struggle. Three facts may be relied on; "all which he saw, and part of which he was"—

15 Prospectus (by Eznr Sargeant New York) of a New Jurnedical work to be entitled Medical & Philosophical Register, or Annals of Medicine, natural History agriculture and the Arts. Conducted by a Society of Gentlemen.

The work will be divided in three parts. 1st Original communications embracing the various subjects of medicine, chemistry agriculture, natural history, botany, and the useful arts; Medical Topography, antiquities of the american continent, articles of american biography &c 2d. Reviews of new publications, in the several departments of medical science: Transactions of am. learned Societies &c.

3. Philosophical & Literary Intelligence: under which head will be included, as far as practicable, whatever is interesting to the physician, naturalist, agriculturist, and Philosopher. Accounts of Literary and learned associations, proceedings of learned Societies; reports of public Institutes, notices of new publications &c. The work will appear once in 3 months occasionally enriched with engravings. Each number to contain 100 pages 8.vo. forming a Vol of 400 pages — Price 2 Dol per Annum

June 14 1810

Astronomical Observations

21 [H] September 7th 1811 about 8 oclock in the evening, a Comet was seen in the northwest part of the heavens, about an hour high, near the Constellation Leo minor, as nearly as could be determined without a celestial Globe. The tail & coma large and bright, the nucleus hardly perceptable to the naked eye. It had been observed by some people in this village the two preceding evenings and from the time account of its place and its change since ~~(it~~ ... ~~does not appear~~ ~~to be approaching its perihelion~~) it appears to be receding from its perihelion.

8th Evening cloudy, excepting near the horizon, which prevented our observing the comet.

9th Clear. At 8h 15m P.M. Comets azimuth 36°-30′ NW. altitude 7°-27′. Sky a little hazy. tail indistinct. Refraction by Table 13 in Bowditch 6′-54″ which subtracted from the altitude 7°-27′ gives 7°-20-06 the true alt.

10th Clear evening. 7h 46m azimuth 40°-30′ NW alt. 10°-46 at 8h 22m Az. 35-15′. alt. 6°-45.. Distance of Comet from Alioth at 8h 15m 05″ is 19°-20 Error of Sextant 2-52″ additive. at 8h 29. 55 distance from Comet 45°-15′-30″ — at 8h 50-30 a Aquilae alt. 55°-32′ (N.B. Clock by Solar time)

Sept 11 & 12th. Cloudy weather and consequently no observations on the Comet.

13th Fair. Observations

P.M. at 7 - 53 - 15 (R.W.)	Comets azimuth	39° - 30′ - 00″ NW.	Alt. 10° - 57′ - 00″
8 - 58 - 13	Do	30 - 00 - 00 NW	alt. 5 - 00 - 00
8 - 04 - 27	Comets distance from Cast - 1 in Tail Ulley northerly	22 - 48 - 30 -	Distances without corrections for index error.
8 - 11 - 20	Do from Arcturus do	42 - 40 - 00	
8 - 16 - 15	— Cast in tail Ulley. below	25 15 - 30	
8 - 20 - 50	— north pointer, below	19 - 15 - 30	
8 - 26 - 54	— alioth — northerly	19 - 18 - 30	
9 - 59 - 20	Alt. a Lyrae (by double att.)	58 - 15 - 45	Include error by Suns diameter 2′ 15″ +
10 - 08 - 05	Do - Do ... do	56 - 45 - 45	
10 - 16 - 10	Do a Aquilae ~~do~~	47 - 52 - 15	

14th Clear Observations

A.M. at 4 - 41 - 20 ([illegible])	Comets azimuth	46 - 00 - 0 0 NE.	Alt. 17° - 15′
— 4 - 51 - 20	Comet from Jupiter north	63 - 40 - 00	Distances of Stars & planets without correction for index error.
P.M. 7 - 36 - 50	— from alioth, below	18 - 45 - 00	
7 - 41 - 10	— from arcturus, northly.	41 - 58 - 30	
7 45 - 30	— from North pointer	18 - 48 - 00	
7 - 50 - 17	— from Cast in Tail Ulley.	24 - 24 - 30	
8 - 00 - 42	— from * A near Comet. South.	3 - 36 - 30	
8 - 15 - 31	— from Cast - 1 in Tail Ulley.	21 - 21 - 30	
8 - 42 - 00	— from Pole Star, ~~westerly~~	47 - 29 - 30.	
7 - 31 - 10	Comets azimuth NW	42 - 45 . 00	Alt. 15° - 15′
8 - 39 - 51	Do — NW	33 - 00 - 00	alt. 7 - 27
9 - 03 - 20	Alt. a Aquilae by double alt.	54 - 36 - 15	Include error 2′ [illegible]
9 - 12 - 14	— Do -- by double alt	54 - 03 . 30	

NB. The azimuths corrected for variation (5° 30′ W) Time apparent by Watch (gaining).

15th September. Cloudy: flying clouds in morn.

Took equal altitudes of sun with Theodolite (smoaky glass formerly with)

Morning h		Afternoon h	
8-43-44	alt. 30°-03'	3-28-57	Suns lower limb.
8-56-02	alt. 32-12	3-15-40	
9-06.33	alt 33-51	3-04-47	

3-28-57 { Suns magnetic Azimuth 69° SW.
Do alt 30°-03' Suns lower limb

Do Semi Diam.	+ 15. 56	Suns Declination from Tables for the time at Deerfield 3°-11' N.
Apparent Alt. cent.	30-18-56	
Refraction	1. 37	
True alt	30-17. 19	

operation for variation

Co Lat 47°. 32'.	Co Sec.	0.13213	Rejecting 1st fig of index
Co. alt 59-43	Co. Sec.	0.06371	
Pol. Dist. 86-49			
2) 194-04 sum			
1/2 Sum 97. 02	Sine	9.99579	
Pol Dist 86-49			
Remainder 10-13	Sine	9.24880	
	Sum	19.24032	
Log. Sine 58-20 × 2	(1/2 Sum)	9.72026	
True Azy from 116. 40 north.			
Mag Do from 111 00 Do			
Variation west 5. 40			

Variation applyed to Cornets azimuth in preceding pages —— 5-30
5 40

16th Took Equal Altitudes of Sun with Theodolite as follows

h mom		° ′	h even	
8.40.45	alt.	32.03	3.05.59	few clouds obscure the Sun
8.55.02	Do	33.00	2.50.50	By watch which was at 8 o'clock A.M. kept 10m back. Lower limb of Sun.
8.58.11	Do	33.30	2.55.55	
9.01.15	Do	34.00	2.52.15	Magnetic azimuth 46-45 SE alt. 37°
9.09.40	Do	35.00	2.46.06	
9.14.50	Do	36.00	2.39.30	

at P.M. 7.15.20	Comets azimuth	43°-45′ alt. 17°-20′	Index error
7.43.30	Do from alioth	16-35-	
7.59.35	Do from North Point	10-48	
8.07.00	Do from N. Star	46-23-30	(Tail measured this night 6 Degrees.)
8.20.00	Do Arcturus (northerly)	40.22-30	
8.30.45	Do a Lyrae Do	72-22-00	
8.51.00	Do lat. – B. Ursa Maj:	19.48.00	

17 September very fair and clear throughout the Day.
Equal altitudes with Sextant.

morn		eodrtery ° ′	afternoon	
8.50.17	alt (double)	63-56	3.04.20	By Capt Wells Clock with Second hand
8.52.36	Do	64.42	3.01.43	
8.55.14	Do	65-32.30	2.59.05	
8.57.36	Do	66-12.30	2.56.47	
Theodolite 9.07.39	alt. (Single)	35-33-00	2.40.14	by watch (doubtful)

This day Sun eclipsed and by observation as follows

Sept. 17.

		h m s	
Beginning	of Eclipse	0-43-04 P.M.	by Clock
Emer	of Do	3-47-39	by Clock
Do	of Do ~~by watch~~	3.46-33	by watch

H m s
(Alt 1.43-34, distance of cusps 80 Divisions of micrometer)

Sums Diameter, in Divisions of the micrometer, 90. Sums Diam of the moon's disque (nearly) 32 minutes. Thence 90 : 32 :: 1 : 21/3 = 1 division of micrometer

Breadth of Sextant (not covered by moon) at the greatest observation, 10 Divisions of micrometer. Thence 90 : 12 :: 10 : 1 1/3

Emer 12 — 1 1/3 = 10 2/3 the digits elapsed by observation

Telescope used in observing the eclipse, a 2 ft Gat achromatic refractor; magnifying powers 75; furnished with a pearl micrometer, made by James London.

The equal altitudes were taken with a best metal Sextant, 10 inch radius, divided by nonius to 30 seconds. also made by Jones: Water was used for an artificial horizon when there was no wind; but when this could not be used by reason of wind molapes was substituted.

Results of equal altitudes taken this Day

1st pm.	11.57-18.30	
2d Do	11.57-09.30	
3d Do	11.57.09.30	H m s
4 Do	11.57.11.30	
Sum	47-48-49-00	Mean 11.57.12.15

h	m	s	in
11.	57.	12.	15

Equation +15.00 for change of Declination { by Dunbars method. See Philosophical Transaction Vol. 16 page 260 No. 42 — See page 96 journal

11. 57 27.15 Solar noon by clock

12
0 2. 32. 45 Clock Slow at noon (Solar time)

	Alt			
at 7.	25. 00	Comes from eastward	39° 36′	Gone by watch. Index error 4. 1″
7. 37. 09		Do from about ———	15. 40	
7. 41. 57		Do from last — I. Alt.	10. 10	
7. 48. 32.		Do from last on Dial	21. 03	
7. 53. 23		Do from north point	10. 24. 30	
7. 50. 39		Do from South point	13. 55. 00	

10 September morning very foggy. About 10 o'clock Sun appeared

Equal altitudes.

forenoon			afternoon	
10-4-57	Alt. (double)	84° 11′ —	1.19-48	Sextant. Day windy. Suns image from molasses and not well defined, of course a little doubtful
10-8-11	Do — ———	85 00 —	1-16-02	
10.12.35	Do ———	86-00 —	1-12 49	

	h	m		
Results. 1 pair	———	11. 57. 22. 30		
2 Do	———	11. 57. 06. 30		
3 Do	———	11. 57. 42. 00		
		2	71	00
		2	35.	30
		11. 57	15.	10
Equation				
Subtract from		11.57.50.30	Solar Noon by clock	
		12		
		2. 09. 30	Clock Slow Solar time	

	°	′	″	‴
Clocks 17th	2	33.	21	Slow
Do 10.	2	10.	06	
Gain of Clock		23.	15	
24 hours —	3			

Inclose error 1 hr Day 4 minutes 14″

Astronomical observations.

18 September

at 9^H - 40 - 00	Comet from Dubhe (α U Maj)	8° - 42′		
P.M. { 7 - 49 . 47	Do from N. Star	— 45 . 38	Error of	
7 . 55 - 22	Do from Arcturus	39 - 13	Sextant 4′ - 17″	
8 - 01 . 00	Do from Alioth	— 14 - 35		
8 - 09 - 00	Do from Cor Caroli	— 19 . 30		

Comets declination, at 8 oclock P.M, deduced from comparison with known Stars and distances, measured. 46° - 03′ North
Right ascension 11^h - 43^m . 51^s = 175° - 57′ - 45″

19 - Day fair with flying clouds.

Equal altitudes

Forenoon	Alt.	Afternoon	
H 8 - 23 - 10	54° —	H 3 - 30 - 33	Suns lower limb.
8 - 32 - 07 —	57 —	3 - 21 - 31	Arch of excess 36′ - 30″
8 - 41 . 22 —	60 —	3 - 12 . 23	Do forward — 28 - 30
8 - 48 - 06 -	62 —	3 - 06 - 06	2) 8 . 00
8 . 57 - 28 —	65 —	2 . 56 - 43	Index error 4 -

Results of above.

	H m s thirds
1 pr —	11 . 56 . 51 . 30
2^d —	11 . 56 . 49 . 00
3^d	11 . 56 . 52 . 30
4^th	11 . 57 . 06 . 00
5^th	11 . 57 . 05 . 30
Sum	59 . 44 . 44 . 30
Mean	11 56 . 56 . 54
Equation for +	15. Annual Deviation
	11 . 57 . 11 . 54

N.B. At 8 oclock 15′ A.M. put watch 4′ forward

Solar Noon by the Clock	Mean noon	Clock fast of mean time	Daily diff.
17th 11h. 57m. 27s. 15th ——	11.54.40 —	2'-47"-15"' ——	4"-15"' gain
18th — 11 57 . 50 . 30	11-54-19 —	3.31.30 ——	17.36 loss
19th — 11-57-11-54 ——	11.53.58 —	3.13.54 ——	

The altitudes taken the 18th were probably a little variant from the truth: As the wind was high and the molasses made use of for an horizon, was in a state of fermentation; which hindered the Sun's image instituent. Rejecting these altitudes and using those for the 19th it will be found that the clock gained 2". 39"' in 48 hours. Say 1" in 24 hours. Hence 24h:1"::43h.23m: and 24:1::3.46:2".3"'

From the data above, it follows that the Eclipse, on the 17th of September, began and ended as follows. Obs.

	h.	m.	s.	th.	
Beginning at	0	45	36	22	Apparent time
Ende —	3	50	29	42	P.M.
Duration ——	3	04	53	20	

Digits eclipsed 10 2/3 (on South side) by micrometrical admeasurement.

Variation of Needle, declined from ~~declined from~~ Magnetic Obs. 46-45 taken the 16 instant (See page 91) 5° 43' West —

Operation

Operation for the equation of equal altitudes viz for Sept. 17 - 1811.

Latitude 42°-28' Co S. 9.86786
Half elapsed time of interval or time of the corresponding alt. See page 91 4-5 for 17 September in degrees } 46°-09 - 9.85803 Sine

10.07381

Sine Alt. 32°-38' — Sec ———— 9.79970
Rejecting 10 in the Sine 39.05

Co. Tang. 39°-05' ———— 10,09034
Suns Decl. Sept 17. 2°- 28- Sec. —— 10,00040
Decrease of Suns Decl. in half interval in seconds of time 12 seconds } Log. 1.07918
Log. 14",79 additive. 1,16992

21st September.
P.M. at 7-35-30 Comets Azimuth 42° NW alt 18°-30'

By Clock at home }
8-12-30 Do from Arcturus northerly 36°-39' =
8-10-15 Do from Pole Star west - 44.17
8-22-00 Do from Alioth N.W. — 11-40
8-28-00 Do last in tail N. 15-50-30
8-36-30 Do dubbe west. 7.49.30 = Tail

Meridian alt of α Aquilae double 111.37-30
Index error 4 minutes. additive

Operation for Latitude

Double Alt of α aquilae 111 - 39 - 30
Index error + - 4 -
2) 111 . 41 . 30
55 - 50 - 45
Refraction — 38
True alt 55 . 50 . 07
from 90
Zen. Dist. 34 . 09 . 53
True Declination + 8 22 . 39
Latitude 42 . 32 . 32 North

Decl. for 1800 8° 21'
Variation for 11 2/3 years + 1 . 39
8 . 22 . 39

To find the time from the Alt. of α aquilae taken Sept 16. see page 88.

True alt corrected for index error & refraction — 55° - 32 - 37
Lat of Deafield 42 - 28 — 42 - 28 . 00 Sec — — 0.132.112
Stars polar distance — 81 . 37 - 21 Co Sec — 0.004.69
2) 179 - 37 - 58
Half sum 89 - 48 - 59 Co Sine 7.50172
— 55 - 32 - 37
Remainder 34 . 16 22 Sine — 9.75071
Sine 2 m s 0 - 22 . 47 — 2) 17.39247
8.69623

Stars altitude

For Stars R.A.
R A 1800 — 19 . 41 . 01
Variation in 11 2/3 years + 34
True R.A. — 19 . 41 . 35

For Declination of Stars.
Decl. 1800 — 8° 21 N.
Variation 11 2/3 years + 1 . 39
True Declination 8 . 22 . 39
from 90 . 37 . 21
Polar dist.

Stars R.A. — 19 . 41 - 35
R.A. of Mercd. — 20 . 04 . 22
Stars R.A. — 11 - 11 - 16
Time nearly — 0 . 53 . 06
Correction — 2 . 03
True time 0 . 51 . 03 by Stars

True time 8 h 51 m 03 s
do by watch 0 . 50 . 30
Watch slow 0 . 0 . 33.
Use the observation on the 10th page 88 and to be corrected accordingly

Astronomical Observations

September 23

at	8 02-45	Comet from P. Star near	43. 38. 30	
	8-09-27	do from Arcturus North	34. 56. 00	
	8-15 00	do from Centaur	13. 02. 30	
P.M	8-21-00	do from α Lyrae North	64. 22. 30	
my Clock	8-25. 15	do from North Pointer	10. 42 00	Southerly
	8 30-40	do from Achernar South	10. 00 00	

Mer. Alt of α Lyrae (Double) 111. 32. 30 Index error 4′

Latitude elected 42°. 33′. 02″ N.

September 24.

attempted to correct the index error of Sextant. and found it by observation as follows

1 Diameter of Sun on 34′

do 30

Diff. 4

half Diff 2 = index error

2 Diameter of Sun on 34′ 30″

do 29.

Diff 5.30

½ Diff 2 45 = index error

3 By consideration of Limbs 2.30 = index error

1st	2′
2d.	2.45
3.	2.30
3	7. 15

mean = 2. 25 Sub. tractive

Results of observations for the time deduced from the Alt. of the Stars whose altitudes were taken Sept. 13. (page 89)

viz By a Lyrae	5′-35″ fast	at 9h-59m:20s	Solar time
Do Do	6 04 Do	at 10-08-05	
Do a Aquilae	6.12 - Do	at 10.16 10	
Mean of above	5-57 Do	at 10.07.51.2/3	Solar time

Therefore the observations of 13th Sept require 5′-57″ correction as

Results of Altitudes on Stars the 14th page 89

viz By a aquilae	6′-17″ fast	at 9h.3m-20s	Solar T.
Do	6-57 Do	at 9.12-14	
Mean of Do	6.37 Do	9-07-47	Solar T.

Therefore observation for 14th require a correction 6.37 fast

Results of equal altitudes taken on 15 September page 90

	H m s
1st pair	12.06.20
2d Do	12.05-51
3 Do	12.05-40
3	1.17-51
mean	5. 57 fast Solar time
Equation +	14,4
	6. 11.4 fast Do corrected.

Results of equal Altitudes 16th Septr page 91.

1st p	11.57.07
2	11.56.56
3	11.57.03
4	11 56.45
5	11 57.53
6	11 57-10
Mean	11.57-09 + 14″,4 = 11h.57m.23s,4 from 12h = 2′.36.6 Slow Solar time

Astronomical Observations

September 24th

P.M. at	8h 07 - 00	Comet from Pole Star (west)	42° 54′	Index error 2′ 22″ Subtractive
	8 - 14 - 00	do from centaurus (North	33. 24	
	8 - 20. 30	do from α Lyrae (WN.	60 - 24	
	8 - 25 - 30	do from (illegible) below —	0 - 19	
		Tail =	8 - 19	

Note the Comet is now in the Constellation of Ursa Major a little below the tail. Right Ascension 12h 14m 45s and Declination 48° 18′ by comparing with known Stars

September 29

P.M. at	7 - 10 - 00	Comet from alcott (west)	8°. 30
	7 - 52 —	do from α Lyrae — northerly	56 - 09
	7 - 55 —	do from centaurus North -	31 - 1½
	8 - 01 —	do from P Star —	42 - 23
	8 - 07. —	do from centaurus tail —	5 - 09

October 1 —

			° ′ ″	
P.M. at	6h 49m	Comet from centaurus tail (below	2 - 12 - 30	
	7 - 17	do from centaurus north	30 - 23 - 00	
	7 - 32 —	do from α Lyrae — below	53 - 16 - 30	
	7 - 43.	do from Pole Star do	42 - 09 - 30	
	9 04	Double alt. α Lyrae —	109 - 58 - 30	Index error 37″ Subtractive
	9 - 11 - 15	do do —	109 - 45 —	

October 3.

P.M. at	9 - 16 H "	Comet, Distance from α Lyrae —	50 - 09 . 30
	9 . 25	Do — from Pole Star —	42 - 07 —
	9 . 29	double alt. α Lyrae —	101 - 06 index error 15" addition

Oct. 4 Measurement of Suns Diameter

on 30' - 30" } on - 31 - 00 } mean Result 1 minute addition
off 33 . 30 } off - 32 - 00 }

Oct. 5.

P.M. at	7 - 37 H	— Comet from Arcturus, northerly	29° - 08'
	× 7 - 42 - 45	— Do — α Lyrae - northward	42 - 12 - 30 doubtful
	7 . 53 .	Do Pole Star west —	42 . 12 - 00
	8 . 02 .	Do north pointer —	29 . 16 —
	8 07 - 15	Do Arcturus —	4 . 25 - 30
	8 10 - 15	Do — α Coronae Borealis north	26 . 57 - 30
	8 29 45	Double alt α Lyrae —	122 - 05 - 00
	8 39 —	Do Do —	118 . 27 —

Suns diameter on 35 - 30" } on 35 } mean Result
off - 29 - 30 } off 29 } 3 . 00 Subtraction

The Comet has now passed the tail of Ursa Major a little west of the last star (in the tail). The nucleus is not very distinct. The tail is about 15 degrees in length, and very bright in the absence of the moon

Astronomical Observations

~~September~~ October 8 Scattering clouds

			° ' "	
P. M at 7h 46m	Comets from a Lyrae (west)		42 - 17 - 30	Index
7 - 54	—	Do East in tail South	9 - 30 - 00	error
8 - 05	—	Do Pole Star West	42 - 53 - 30	
8 - 12	—	Planet Mars (North)	91 - 12 - 30	
8 - 28	Double alt. a Lyrae	——	113 - 06 00	Index
8. 33:20	Do — Do Do	—	111 - 52 00	error

Tail about 15 degrees long, & lengthd. Nucleus not distinct

Note Suns Meridian altitude on the 5th instant,
viz lower limb & double alt —— 85° 20' 30"

Operation for Lat.

Results of altitudes
for time taken Oct 1. 3.
& 5. Viz. (a Lyrae).

1st watch slow	3' 07"	sol
Do —	2. 08	time
2	5. 15	
mean	2. 37. 30	
3d watch fast	4. 27 00	
5th Do — fast	9. 51. 00	
Do — fast	8 - 17 00	
2	18. 08	
	9. 04 mean	

Index error —	3
2	85 17. 30
	42. 38. 45
Semi Diam. +	16. 02
Apparent alt.	42: 54 : 47
Refraction —	1 01
Correct alt.	42 . 53 . 46
	90
Zen. dist.	47 . 06 . 14
Suns decl. S. —	4 . 32 . 35
Latitude	42 33 : 39 N.

October 9 —

	H.			° ′ ″
P.M. at	7. 02 — 45	Comet from centres above		29 - 21 - 00
	7 - 08 - 30	— do	a Lyrae below	40 - 44 - 30
	7 - 16 - 00	— do	pole Star do	43 - 03 - 00
	7. 25 - 30	— do	Mens North	90 - 11 - 30
	7 - 53 —	double alt	a aquilæ	105 - 49 - 30
	8. 01 —	Do —	Do a Lyrae —	124 - 32 - 30

Oct 10 mensuration of Suns Diameter

Viz	on —	34. 30″	Off	29′ - 00	Index error 2′ 45″
	on —	35 - 00	Off	29 - 30	Subtractive.

October 11 Double Meridian alt Suns lower limb 80° 44′ 30″ erroneous

P.M.	H.		
	7 — 4 — 00	Comets azimuth	56° 30′ NW. alt. 39° 03′
Two Altitudes of a Lyrae omitted.	7 - 09. 30	Do from a Lyrae (B.)	37. 28 —
	7 - 18 - 00	Do from Centaurus	30 - 09 above
	7. 23. 00	Do from a Coronæ B.	20. 20 North
	7. 35 - 45	Do from Pole Star (B.)	43. 45

Last intail U Maj: Magnetic Az. 35° 30′ NW alt 22° 38′

Oct 12. A.M. Sulgrave Moon & Suns nearest limbs 53° 26′ at 7h - 53 - 25″

	H.			
	8 - 35	double alt	Suns lower limb	41 - 31 - 30
	8 - 40	Do	— — —	43 - 08 - 00
	8. 42	Do	— — —	43 - 42 - 00

Mensuration of Suns Diameter on 34. 30″ Off 36. 30″ mean error
on 35 - 00 — 30 - 30 2′ 27″. 30″ Said

13th Semi Diameter on – 33′-15″ off – 31′-30″ } 52½ forenoon Sole.
on – 31-15 — 33.00 } } 1′ 22″ 30‴ addition
on 31-30 — 33-30 } } afternoon

P.M. at 7-18-00 Comet from a Lyrae below 34°-04′-00
7-24 — — from ditto above 30-44-30
7-28 — from a Cor. Bor. North 18-52-30
7-36-15 — from Pole Star below 44-54-30

Note Double alt. (mer) Sirius – 62-04-30 taken on 12th ~~[illegible]~~. Lat from above 42°-33′ N.

The weather for several Days past ~~the weather~~ has been as warm as is ~~usual~~ common in July. Can this be caused by the Comet?

Variation of Compass deduced from azimuth of star last in tail of Ursa Major (See observation for 11th instant) 6°-04′ W.

At 8h. 35′-30″ double alt of a Lyrae 108°.42′
8-42-30 Do Do – 106-10

Results of above for time { By 1st observation 8′ 40″ fast } (watch)
{ By 2d – Do – 13.38 fast }
mean of above 11.09 fast.

Results of observations for time viz on the { 8th October mean 4-33″ slow } Stars
9th Oct – mean 3.22½ fast }
11th Oct mean 3.40 fast }
12th Oct. mean of 3 observation of Sun } 5-54 fast

October 17.

P.M. at 7^h - 03 - 00 Comet from arcturus above - 34° - 09' - 30"
7 - 06 - 00 — do a Lyrae below - 27 - 28 - 00
7 - 08 - 00 - do a Cor. B. Northerly 18 - 07 - 00
7 - 11 - 25 — do last in Tail U.M. (S) 25 33 30
7 - 14 - 30 — do Pole Star - 47 - 19 : 30
7 - 17 - 45 - - do a aquilae South 58 - 29 - 00

Distance between a Lyrae & a Cor. Borealis 39 - 45 - 30
H. m. s.
at 7 - 47 - 35 double alt. a Lyrae - 118 - 11 - 00
P.M. 7 - 51 - 45 do do — 117 - 13 - 00

For index error. Suns diameter { on - 31' off 34' - 15" } mean
{ on 31.15 off 34 - } 1.30" add

The nucleus is more distinct this evening, than I have seen it. The air very clear. A convexity on the South side of the tail is now obvious

Octr. 18 ~

P.M. at 7^h - 21 - 15 Comet from arcturus above 35° - 01' - 00"
7 . 26 - 00 — do a Lyrae below 25 . 51 . 00
7 - 28 . 30 — do a Cor. Borealis (N) 18 . 35 - 00
7 . 32 . 10 — do Pole Star below 47 - 54 - 00
7 - 36 - 45 — do last in tail South 27 - 11 - 00
7 - 47 . 20 — do a aquilae below . 56 . 52 - 00
7 - 54 . 00 — do planet Mars — 78 - 16 . 30

} Index error

Double alt of a Lyrae at 8^h - 05^m - 00 = 112° - 12' - 30"
do do do - 8 - 08 - 40 = 111 - 00 - 45
Comet distinct - air clear & stars very bright.

18th Continued
h m s
at 10 – 5 – 45 Comets azimuth 47° – 10' NW, Alt. 12° – 01'.
May. Azimuth of Alioth 6 – 20 NW. alt. 11° – 15'

Traced a Meridian by a Transit of Alioth and the polar Star over the meridian, according to Mr. Elicotts method.
variation of needle as obtained by Circumferentor, 6 – 10' W – (probably too large)

Results of observations of α Lyrae for time taken 17th – 2' – 28" fast } mean
do of [illegible] do do 18 7 – 17 60 } watch

Variation of needle from az. of alioth taken the 18th 5° – 26' W

19 October observations [illegible] [illegible] for [illegible] [illegible]
on 31' 15" off 33..30" error 52" ½ subtractive

21 October
AM 8 – 31 – 30 double alt. ☉ = 37° – 40' – 30"
8. 38 – 35 do do —— 39 – 40 00

Sun's diameter on 32' – 15" – off 33' error 22" ½ forenoon additive
on 32.15 – off. 32 do 7" ½ afternoon subtractive

Suns double meridian alt. lower limb 73° – 19' – 40"
P.M. at 7h – 49m – 20s Distance of furthest limb of moon & α aquila 45° 9' 30"
7. 54 – 30 Comets from α Lyrae (B) 21°. 19'. 30"
7. 57. 45 —— from α Cor. B. [illegible] 20.05 – 00.
8 – 01 – 09 —— from α [illegible] —— 51.23.00 } error
8 06. 20 —— from Cast in Ursa M. 32.37.30 } 7" ½ Sub
8. 10 – 10 —— from Pole Star 50.19.00 } tractive
8 – 13. 15 —— from α Cygnus [illegible] 42.39.30.

Double alt a Lyrae
at 7h 8m 10s - 00 - alt 101° - 12' - 30" } Index error of the Substitute
at 11h 8 - 24 - 00 alt 101 - 47 00 }

Length of Comet Tail 1½ degrees. Nucleus very clear - Tail distinct. Comet nearly in a line between Arcturus & a Lyrae but a little north.

Elements of the orbit of the Comet (~~xxxxx visible~~) Calculated by the assistance of Nathaniel Bowditch, Esq. of Salem
Secretary of the American Navigator.

The Geocentric Longitudes and Latitudes of the Comet, used in finding the Elements of the orbit were deduced from distances of the Comet from Arcturus Lyrae and Double observed at Cambridge by Professor Farrar, and at Nantucket by the Hon. Walter Folger, Jr. By combining the observations of Sept. 6, 9, 12, 15, 18 & 23, the Elements of the orbit were found by the method of La Place, and corrected by the observations of Sept. 6, 15, and 23.

Perihelion distance 1,052. The mean distance of the earth from sun being 1.
Time of passing the perihelion Sept. 6th 1811 at 18 Hours Greenwich time.

Astronomical Observations

Place of Perihelion counted on the orbit of the Comet 2.21° S.

Longitude of ascending node, 4 S. 18 degrees

Inclination of the orbit to the ecliptic, 74 degrees.

Motion retrograde

The distances of the Comet from the earth, compared with that of the suns distance from the earth, estimated at 10, were found in February 1811, to be 30; in June, when visible at the Cape of Good hope came out of the degrees south of the equator 23; on the 6th of Septr. 17. About the middle of October it will be at its least distance, 13; after which it will increase, and in the months of December it will be about as far distant as in June. In the latter part of January and in February, 1812. the distance will be above 30; The latitude of the comet will be small; and as it will be nearly in conjunction with the Sun, it will probably then be invisible. The least distance of the Comet from the Earth is about 120 millions of miles. The least distance of the Comet from the Sun, 101 millions of miles. — The tail of the Comet

has been observed to be about 10 or 12 degrees on Longth, which would make its real length nearly equal to half the distance of the earth from the sun.

These elements will require some corrections (perhaps two or three degrees) to be determined when a greater number of observations, or a longer arch of the orbit shall be made. The observations made early in September, were liable to a small error, from the uncertainty of the refraction, the Comet having been observed near the horizon.

These elements differ from those of all the Comets whose orbits have been calculated; as may be seen by examining the tables of La Lande and Vince, or that in Rees's Cyclopaedia under the article "Comet". The Comet is therefore one that has been before unknown to astronomers.

Wishing to estimate nearly the apparent course of the Comet from these elements, I described a circle on a stiff piece paper to represent the orbit of the earth and a parabola corresponding to it, for the orbit of the Comett similar to Fig. 267. Vol. 3 Edit. 3 of La Lande's Astronomy) and marked on these curves the places of those bodies for each day of the present year. A slit being cut through the

circle in the elevation of the line of Nodes, the parabola was inserted so as to be inclined to the ecliptic by an angle of 74° the point representing the perihelion being above the plane of the ecliptic, so as to make the angle at the sun by the perihelion and Node 57°. By this apparatus the following estimate of the apparent course of the Comet and its distance from the earth were made.

In the month of February 1811 the Comet was near to the eastern point of the Constellation Virgo. Its motion was then east inclining to the north. It passed a few degrees to the eastward of the great Dog, and its elevation then became nearly north, being Stationary in Long. in the month of May. It passed near to the eastern point of the Great Dog, early in June, inclining rather towards the east. On the 16th July it passed the ascending node in the Long. of about 4s 8 degrees, and then moved northwestly towards the foot of the great Bear where it was first seen, after the conjunction with the sun, on the 6th of September. On the 5th of October it was near the right of Boötes. Here he at its greatest north Lat. about the middle of Oct. near the right foot of Hercules, after which it will begin to move towards the ecliptic, through the

left knee of Hercules, towards the Eagle ~~and~~ the Dolphin, the water bearer &c. It will be near the Eagle about the 1st of December. It is to be observed that the apparent positions thus roughly estimated are liable to an error of 2 or 3 degrees. The orbit of the Comet falls without the Earth's orbit." Thus far Mr Bowditch as published in the paper.

Latitude of Salem 42°.. 33'.. 30" N } according to Mr Bowditch; taken
Longitude 70 - 53 - 01 W } near the centre of the place

October 23d

P.M. at 6h - 19m	Comet from a Lyrae below	18° - 33' - 30"	
6 - 30	from Arcturus above	40 - 24 - 30	
6 - 35	from last in tail U.M. south	35 - 54 00	
6 - 38	from a bor. Bor above	21 - 34 - 30	Index error
6 - 43	from a aquila N.W.	47 - 52 - 00	
6 - 46	from a Cygni below	40 - 51 - 00	
6 - 54	from Pole Star S.W.	52 - 05 - 00	
For the time { 7 - 38	double alt. a Lyrae	116 - 16 - 30*	
7 - 45	Do — Do	114 - 00 - 00	

Comet a little north of a line from a Lyrae and Arcturus. The tail less distinct on account of the moon's light. The nucleus is more distinct than it has been.

26 October

P.M. at	6ʰ-52-00	Comet from α Lyrae below	14°-54′-00″
	6-58-00	— from α Corona Bor. above	24-48-00
	7-02-00	— from α Aquilae north	82-55-00
	7-09-00	— from Saturn north	58-03-00
	7-12-00	— from Mars do	67-24-30
	7-21-00	— from α Cygna below	38-14-00
Time {	7-49-00	doub. Alt α Lyrae —	110-03-00*
	7-54-00	do do —	108-20-00

Comet a little past the line from α Lyra to α Corona.

27 October Semi diameter { on 32′-45″ off 32′-15″ / on 32-45 do 32-30 } 1½″ Substractive

28 October

P.M.	6ʰ-57-00	Comet from α Lyrae below	13°.06′.40″
	7-01-30	— do α Aquilae north	39-33.30
	7-10-00	— do α Cor. Boreal. above	27.07.30
	7-17-30	— do last in tail U.M.	44-27-00
	7-23-00	— do α Cygna — below	36.52-30
	7-29-00	— do α in Hercules (Belly)	21-01-00
Time {	7.45-30	double alt α Lyrae —	105-50-30
	7-47-05	do do	105-14-30
For {	8-04-20	do moon L.L. —	77-00-10
	8-08-20	Distance nearest L. ☽ & α aquilae	63.42.45
Longitude	8-12-00	do do do do —	63-44.00
	8-15-45	Double alt ☽'s L.L. —	78-17-10

28 continued

Pitt	9 - 18 - 20	double Alt ☽'s LL	88 - 16	For Longitude
	9 - 22 - 45	Distance of farthest L ☽ & Aldeb.n	69 - 00	
	9 - 27 - 35	Do Do Do	68 - 58	
	9 - 32 - 45	Do Do Do	68 - 56	
	9 - 34 - 20	double alt. ☽'s LL	89 - 22 - 30	
		Meridian alt. ☽'s LL	90 - 01 - 30	

29th October

Pitt at	9 - 08 - 00	double Alt α Lyra	77 - 58
	9 - 10 - 40	Do Do	77 - 02 - 30
Longitude	9 - 21 - 20	doub. alt. ☽'s LL	89 - 00 - 00
	9 - 24 - 40	dist farthest L. ☽ & aldebaran	54 - 03 - 00
	9 - 31 - 20	Do Do	54 00 - 00
	9 - 34 - 05	doub. alt ☽'s LL	91 - 29 - 30

Comet in a line with α Cygna & α Lyrae - Tail not very distinct on account of moons brightness.

Latitude of Deerfield Meeting House deduced from meridian alt. of Sun taken the 21st instant (viz 73 - 19 - 40) 42° - 33' - 07" N.

2 November

Meridian alt. (double) of ☉'s LL. 65° - 10'

This gives the Lat 42° - 33 - 15 N.

2 November continued.

Sun's Diameter on 31'-45" } on 32'-00" } error 40"+
off 33-30 } off 33-30 }

PM at	H 7 - 05 -	Comet from α Lyrae below -	11°-36'-30"
	7 .. 22 -	— — from α aquilae north -	31-45-00
	7 .. 27	— from α Cygnae below -	34-25-30
	7 .. 17	double alt. α Lyrae	95-19-00

Comet's tail much less than it has been - nucleus not very distinct.

4 November.

Meridian Alt. Sun's L.L. 63°-55' (double) Index err. 30"+

Latitude deduced 42°-33'-01"

Sun's Diameter on 32'-15" off 33'-15". on 32'-30", off 32'-30" Error 30" above

PM	H m 6 - 21 00	Comet from α Lyrae below —	12°-15'-00"
	6 - 27 00	— from α aquilae Right	28-58-00
	6 - 34 - 00	— from α bor. Boo —	35-45-30
	6 - 39 00	— from Lantern Tent Well Left -	55-00 00
	6 - 43 - 30	— from α Cygna below -	33-56-30
	6 - 47 - 15	— from (α Hercules) — above -	17-34-30
	6 - 53 - 00	— — Pole Star — Left —	63-08 00
	7 - 00 00	double alt. α Lyra	108-12-00 *
	7 - 12 - 00	do - do do	107-11-00
		Length of tail of Comet	9-30 00

9 November
PM 6-44 - double alt a Lyrae - - 105-29
6-48 - Comet from do - 15-39
6 51 - do a Aquila - 22-55
7-46 - do - a Cygni - 33-14-30

10 November
PM 9-17-30 double alt aldebaran 65-37-30
9-23 - - Comet from a Lyra - - - 16.35 00
9-27 - from a Aquila - 20-52 -
9-31 - - from Polaris - 68-03
9-35 - from a Cygna - 33-11-30
9 39 - from Cassiopea - 72-13 -
9-47 - Double Alt aldebaran - 76-19 - *
Comets nucleus indistinct

11 November Suns Diameter on 29-30 off 34-30 on 29-50 off 34-28
Result 2'-22½" +

12 November Comet from a Lyrae - 10°-10'-30"
PM 6-31.00
6.36 - - from a Aquila - 18-36-00
6-43 - from a Herculis - - - 20-00.00
6-48 - from a Cygnae - 33-21 -
~~6-54~~ - ~~from a Pegasi~~ -
7-05 - Double alt. a Lyrae - 97-20-30
Comets Nucleus very indistinct - cannot be seen through the long telescope so as to determine the contact with the orb.

November 15.

At 11. 10 hours.

⊙s alt ~~A~~	20° 38′	Mag.	azimuth	140 – 51	from North
do do	21 – 23	do	— do —	150 – 13	do —
do do	23. 09	do	do —	153 – 35	do —
do do	23 – 26	do	do —	154 – 12	do —

November (17) 11

At 11. alt	6 – 10	Comet from	α aquelice (night)	13 – 00
	6. 15	— —	from α Lyrae (left)	22. 32. 30
	6 – 22	— —	from α Cor. Bor. above	50 – 10 – 30
	6 – 26	— —	from α Cygnae below	33 – 57 – 30

Watch night Solar time.

November 18 Comet from

At 6. 27	— — —	α Lyrae left	23. 22. 30
6. 31	— — —	α aquelie night	12 – 05 —
6. 37	— — —	α Cor. Boreali above	51. 11. 30
6. 42	— — —	α Herculis — above	23 – 55 —
6 – 47	— — —	α Cygnae — below	34 – 07 —
6. 56. 30	— — —	double alt. α Lyrae	89. 11.

November 22

Sums Diameter on 30. 30′ 34 – 00″ Result 1′ 45″ +

23 do do — on 30 — 35. 30 Result 2 45 +

Double mer. alt ⊙ 26 53 – 49 – 30. Lat. clocked 42° 33 – 09

November 25.

P.M at 7-40	Comet from	a aquila right	5°-32'.00"
7-45	—	from a Lyrae left	28-59-30
7-50	—	from a Cygnus below	35-41-00
8-00	—	from a Pegasi below	51-07-30"

November 26

P.M at 5-42	Double alt a Lyrae		105°-56'
6.44	Comet from Do		29-43
6-55	—	from a aquila	4-44
7-00	—	from a Cygnus	35-57-30
7-00	—	from Mars	38-18 —

November 28 Sun's Diameter on 31' of 34-15" Result 1.37" +

December 2d H 6-15	Comet from a Lyrae left		33°.50'
6-20	—	from a aquila above	00-22..50
6-25	—	from a Cygna below	37-31-
6-33	—	from a Pegasi below	47-33
6.54	Double Alt. a Lyrae		73.35

To the naked eye the Comet and a aquila appear very near a contact. Indeed the Star seems to be the nucleus from which the tail proceeds; this last is much diminished the length about 4 degrees.

The R. ascension of a aquila by Zach's Tables 19h 41m 33s

Declination of Do by Do — 8°-22'-33"

These give the place of the Comet nearly.

December 4th

P.M.	6	20	Comet from a Aquilæ	left	1° 17′ 30″
	6	30	—— from a Lyræ	Left	35 03 —
	6	33	—— from a Cygnæ	Left	38 03 30
	6	36	—— from a Pegasi	below	46 37 15
	6	46	Double alt a Lyræ		72 40.

December 8th

Suns Diameter on 29′ 30″ off 36′ 30″ Index error 3′ +

P.M.	7h	00m	Comet from a Lyræ	left	37°. 20′
	7	10	—— from a Aquilæ	left	3 . 53
	7	15	—— from a Pegasi	below	44 . 48
					51°. 44′
December 14th P.M.	7	10	Comet from Bonnethaut	right	51°. 44′
	7	20	—— from a	Aquilæ	left 7. 33
	7	25	—— from a	Pegasi	below 40 . 20

December 15th Suns diameter on 30′ off 36′ Index error 3 +

December 17th Suns diameter on 30′ off 36′ Index error 3 +

Double Meridian Alt. suns L.L. 47° 40′ Lat. deduced 42° 32′ 58″

February 1st 1812.

Mag. Az.	Suns	130° 45′	from north	towards East	Alt. 11° 30′
Do	Do	131.30	Do	Do	12. 09
Do	Do	132.30.	Do	Do	12. 42
Do	Do	133.00.	Do	Do	13. 09
Do	Do	133.35.	Do	Do	13. 40

Results from the foregoing Astronomical Observations.

Latitude of Deerfield meeting House 42°. 32'. 30" North

Longitude of Do — — — — — — — — — — — — — — — — 72°. 41'. 00" west from Greenwich

Variation of needle, in 1812, — — — — 5°. 28' west; & supposed to be stationary, or nearly so.

Note The above are ~~obtained from~~ the means of the several observations.

Rule to find the index error of the Sextant.

The index error is the number of degrees & minutes indicated by the noniius, when the limit and reflected images of an object coincide with each other. To find the error, bring the limb of the suns image to coincide with the limb seen directly, both on the quadrantal arc, and on the arc of excess.

If the diameter taken by moving the index forward on the quadrantal arc be greater than that taken on the arc of excess, then half the difference is to be substracted; but if the diameter taken on the arc of excess be greater than that by the quadrantal arc, half the difference is to be added. If the numbers be the same in both cases the glasses are truely parallel and there is no index error.

120

19 22

Extract from Hume's History of the Reign of James 1st.
See his History of England Vol. 5 page 172.

In tracing the coherence among the systems of modern theology we may observe, that the doctrine of absolute decrees has ever been intimately connected with the enthusiastic spirit; as that doctrine affords the highest subject of joy, triumph & security, to the supposed elect, and exalts them, by infinite degrees, above the rest of mankind. All the first reformers adopted these principles; and the Jansenists too, a fanatical set in France, not to mention the mahometans in Asia, have ever embraced them. In the Lutheran establishments were subjected to episcopal jurisdiction, their enthusiastic genius gradually decayed, and men had leisure to perceive the absurdity of supposing God to punish, by infinite torments, what he himself, from all eternity, had unchangably decreed. The king, tho' at this time, his Calvinistic education had rivetted him in the doctrines of absolute decrees, yet being a zealous partizan of episcopacy, was insensibly engaged, towards the end of his reign, to favour the milder theology

of Arminius. Even in so great a doctor, the genius of the religion prevailed over its speculative tenets; and with him, the whole clergy gradually dropped the more rigid principles of absolute predestination and unconditional decrees (- - - - - -)

And upon the restoration of the church, tho she still retained her old subscriptions and articles of faith, was found to have totally changed her speculative doctrines, and to have embraced tenets more suitable to the genius of her discipline and worship, without its being possible to assign the precise period, in which the alteration was produced.

For the rise of Enthusiasm, and for rational remarks on this spirit, See Locke's Essay on the Human understanding, Chap. 19. Book 4th Vol 2d. And as an antidote to it (Enthusiasm) See Chap 20 Same Book & Vol. (of wrong assent, or error.)

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23 Notice of New Publications. Contind from page 87.

Major Landmann's account of Portugal, in 14 parts, will speedily be completed, and will consist of historical, military and picturesque observations on portugal; illustrated with numerous coloured views and authentic plans of all the seiges and battles fought in the Peninsula during the

late war. The engravings about 70 in number are accurately coloured from the original drawings of the author. London Monthly Magazine for June 1816.

Munroe & Francis, N4 Cornhill Boston, offers for sale (April 1816) Elements of Fortification; by Lewis Lochee, Master of the Military Academy at Little Chelsea. With 17 large plates.

Elementary Fortification. Illustrated by upwards of 500 diagrams in wood and several engravings. By Lieut Col. C W Pasley. Author of Essay on military Policy. 8vo. London April 1816

During the year 1815 there were published in France, 674 works on various subjects; of which 16 are on the military Art. Panorama April 1816.

The Principles of War exhibited in the Practice of the Camp. 10/6 London Mag. July 1815.

Robert Wilson's Brief Remarks on the character & composition of the Russian Armies 1 vol 4to 280 pages. (Valuable work)

Royal Military Chronicle, (a periodical publication, London). 1 vol 8vo at Boston Dec 1816. Seen by Major Hart

A complete map of the Field of Waterloo, showing its minutiae and the position of the armies, when the [illegible]

treated, with views of each contested point, is preparing by Wharton of Gray's-Inn Square. London 1816

The Baron is preparing for publication (under the patronage of his Royal Highness the Prince Regent) a splendidly illustrated work on the late brilliant campaign of Waterloo. London 1816.

Capt O'Connor of the U.S. Artillery has for some time been engaged by order of the War Department, in translating from the French a celebrated treatise on the Science of War and Fortification, originally composed by the order of Napoleon for the use of the Students of the imperial Polytechnic & military Schools of France. This work embraces the whole science of War, and field and permanent Fortification, with all the modern inventions and improvements in the latter branches; and in France, is universally used by Students and is esteemed beyond all other productions on those subjects, being considered as a master piece. Shortly to be published. June 1817.

Arch Duke Charles is employing his leisure hours on a work to be called "Commentaries on the Principles of the Art of War. 1816.

Observations of a Veteran on the Principles of War, military Economy, Education and Discipline &c. comprising a Review of the prominent events of the Wars of the last Century. Price 10/ boards. English Relation of the Operations and Battles of the Austrian & French Armies in the year 1809 with 3 plans of the Diviles and 3 the Battle of Wagram. By W. Mathe. Price 4/- in Boards. English

The Aid De Camp, or staff officer's assistant, containing correct statements of the pay, allowances and contingences granted to every officer employed on the Staff in Great Britain. Price 6s in Boards.

~~Tielke's~~ account of Events in the Seven Years War translated by Mess. Craufurds
Thielekes

old works

History of British Dominions in North America, from the first Discovery of the Continent by S. Cabot in 1497 to the Peace of 1763. London 1773 - 4to. Quoted by Holmes. see Annals

Charlevoix (Pere de) Histoire de la France Nouvelle Paris 1744. 3 Vol. 4to
Do Travels in N America. Lond. 1763. 2 vol 8vo.

Champlain (Sieur de) Voyages de la Canada Paris 1744 - 4to.

Remembrancer from 1775 to 1784 London (Almon) 17 Vol. 8vo.

Smith's (William) History of the Province of N York to A.D. 1732 Lond. 1757 4to

Stedmans History of American. London 1794. 2 Vol. 4to plates.

Universal History (Modern part) Lond. 1763. Vols 39. 40. 41. 8vo for History of the war of 1755.

Wynnes History of the British Empire in America London 1770. 2 V. 8vo.

Review of military Operations in North America from Commencement of French hostilities in 1753 to the Surrender of Oswego 14 August 1756 in a letter to a Nobleman 1 Vol. 12mo see Historical Collections

Precis [illegible] des [illegible] militaire [illegible] originally [illegible] for the [illegible] Royal Engineers [illegible] with 1190 engravings. 3 Vol. [illegible] $22.50 [illegible] New York. 18[illegible]

24 Distressing Intelligence.

January 24th 1817 I received a letter from my son in law, David I. Dick inst., dated Glen's Falls, State of New York, January 13th and 14th announcing that my Daughter Fanny was delivered of a son on the 8th instant and on the 14th died of a puerperal fever.* I cannot better describe the distress, occasioned by this intelligence, than by the following letter which I wrote him, by his Brother Rodolphus who with his wife and Sister Clarissa, set out for the Falls on the 27th.

Deerfield January 26th 1817.

Dear David.

Your letter of the 13th and 14th instant was received the 24th. "Fanny is no more". Is this true? O God! I must believe it so. Delivered of a son on the 8th and a corpse on the 14th (— — — — — — —) Fill the blanks with every thing a fond Father could express in his calmest moments.

Our family were in full happiness of all their usual enjoyments when your letter arrived. The black seal indicated some thing inauspicious. With trembling hands I open the letter — hopes revive on reading the first lines — "the mothers sufferings were then deemed light" The word then, dreadfully ominous! "A relapse hath occurred that shrouds around a doubtful uncertainty

*: See Article 23 of this Vol. for a copy.

tainty. The morrow is uncertain". Here I pause with anxiety, but the eyes soon steal along the lines and meet the fatal words: "Thurs of the 14th instant. The close has come! She is no more!" - Oh! She is then dead! I proceed from the office to the mother. With eagerness she inquires. "Is there a letter from David". Yes! "Is Fanny well"? There a letter which informs she has been confined of a son, and that she is unwell, very unwell, dangerously sick. Groans follow. "Is Fanny alive"? I fear not. "O tell me is Fanny dead"! I pause; but this adds stiffness to the scene - I inform that she is dead! Here let me leave another (— — — — —) The mother becomes a little more calm and I read the letter. "Is Fanny dead" is the distracting enquiry of all the family - It is too true, she is dead! - all in tears - When a little composed I proceed to your brothers house - There all mild and cheerful - I sit down and pause a little anxiety is perceptable in their countenances (it was an unusual time for me to call) "Fanny news from the falls! "O what! I relate the dreadful tidings - All in tears. Sighs and sobs fill the room. I remain mute, endeavouring to suppress my grief. - Your mother accompanies me to your sisters Eyres's, and soon both to my house. A scene of distress follows.

The melancholy tidings flew through the street - the neighbors arrive with eager enquiries "is Fanny dead?" His so. all join in tears and sighs. - But enough of grief - I forbear.

You did not inform whether the infant was alive. We are anxious to know of its present situation and more particulars of Fanny's death. You say you shall write on the 16th instant. We shall look for the letter and part from our numerous enquiries till it arrives. We were making arrangements to visit you in February, but shall now delay. If convenient we hope you will come to Deerfield with Rodolphus, where we should be exceedingly glad to see you. If you have a good likeness of Fanny, and can spare it, we will thank you to send the dear relic that we may once more behold the pleasant features of the face we can see no more. If the infant is alive & well, can it be safely brought to Deerfield? We should be glad to take care of and rear it. But we submit this allogether to your own feelings. I think there might be danger in the attempt.

With another expression of grief, for you know there is "joy in grief" I will close.

"Sweet child thy parents fondly thought,
So thine thy little-bed, not thy bier;

But

"But thou hast left a being fraught
With wiles and toils and anxious fear,
For us remains a journey drear,
For thee a blest eternal prime,
Uniting in thy soft career,
Youth's blossom with the fruit of time".

—

Farewell dear Child!

"O'er the cold turf where thy pale relics sleep,
Shall fond remembrance oft' repair to weep"

I am. Dear David most affectionately
yours E. Hoyt

A few days after the first letter from David I received ~~from him~~ the following.

Glen's-Falls Jan. 17-1817.

Respected Sir.

Mine of the 14th with all its woes on this northern came to hand. Grief having subsided into silence I am prepared to narrate the sickness and death of my dear wife

wife. The wretched husband is left to tell the melancholly tale. On the evening of the 8th at 7 oclock she was taken ill and before 10 elapsed with a pain. The pains were not excessive. On the ninth she informed me that she had not been so well for four months. On the tenth she missed from the chair took physic it abated. On the eleventh she complained great pain in the Bowels attended with some nausea bloating & occasional derangement. On the 12th an increase of derangement and no pain except (when moved) in the shoulders. On the 13th no pain but an alarming lapse of dejection and increased derangement, unable to speak. Cotrine in the evening her extremities grew cold until the morning of the 14th at 6 oclock without struggle or groan, she expired. She was interred on the fifteenth. A Sermon was delivered by my friend and classmate Mr Hamilton, an Episcopal Clergyman. The unusual concourse & the kind & sympathetic attention of the people were testimonials of respect.— In my course in the pledge of an affectionate wife— Image of thy dear mother: Smile not upon a Fathers sorrows— but shed a tear to worth departed! Join innocent Babe thy silence to our solitude!

The evening preceding Fanny's death or the afternoon, the Physician informed me that she could not survive the next day. Until then I was unacquainted with her danger. Unhappy

fatal apperance; unexpectedly merged in all the miseries of woe. How cruel is that change which comes unforseen, unprepared for! one mutual resolution has been summoned or warned to meet a lovely wife expire. Philosophy melts away; and sensibility indulges in all the wantonness of sorrow. Husband, Infant! how to mourn your hapless no joy but grief!

Recline to thyself & learn to thy family & mine the blessings of thy unfortunate Son, who unable to console his own feelings is unable to learn consolation to others. Adieu!
& Remembrance with kind regard.

Daniel F. Dickinson

Tuesday the 11th of February Rachel Shus Dickinson returned to Greenfield from the Hills with the infant. It had been placed under the care of a widow woman to nurse by hand; but as she took it merely out of pity to the child she readily resigned the charge to Mrs Dickinson; by whose kind care, aided by her sister Eliza Dickinson, it was brought safely home. Having procured a healthy wet nurse (with a child two months old) the infant was brought to my house on Thursday the 6th instant.

Mrs

The sensation produced on the removal of the infant is better felt
than discribed. It was joy mingled with grief: & while we gazed on
the little treasure our agonizing wounds were opened anew; and bled
at every pore. She depicted in our minds, the happiness the deceased
mother would have enjoyed in the care of her dear babe ~~[illegible]~~
~~permitted to live~~ & the rapture she would have expressed on bringing
it to her friends, had she been permitted to live: But we saw her cut
off in her prime; disappointed in her fond hopes, and a lifeless corpse
mouldering in her "narrow house", from her friends, never more
to ~~cheer~~ us in the land of the living. The scene was too tender
we gave sensibility full licence, and wept with bitter anguish..

The Father's address to the Infant (from Doddridge)

"And thou, my little Mourner, left behind,
To hear a father's plaints, to share his woes,
When reason's dawn informs thy infant mind,
And thy sweet ~~lisping tongue~~ shall ask the cause,
How oft with sorrow shall mine eyes run over,
When twining round my knees, I trace
Thy mother's smile upon thy face!
How oft to my fond heart shalt thou restore
Sad memory of my joys — Oh now no more!
By blessings once enjoy'd now more distrest,
More beggar'd by the riches once possest.

My

Thy little dawning! — cleave to me graven
By all the tears that's caus'd — (O strange to know)
Bought with a life yet dearer than thy own,
Thy cradle hunch'd with thy mother's sire,
Who now shall seek with fond delight,
Thy infant steps to guide aright?
She, who with doating eyes, would gaze
On all thy little artless ways,
By all thy soft endearments blest,
Hail clasp thee oft with transport to her breast
Alas! is gone — yet shalt thou know
A father's dearest, fondest love!
And O! sweet guileless smile, (unconscious state!)
As yet unconscious of thy hapless fate,
When years thy judgment shall mature,
And reason shows those ills it cannot cure,
Will thou, a father's grief to assuage
Be untrue to know the Phoenix of the south!
(Like her thy mother dy'd to give the birth)
And be the comfort of my age!"

Biographical Notice

Fanny was born May 29th 1794 at Deerfield, in the House formerly owned by Jonathan Ashley Esqr. at the north end of the street, where I first commenced house keeping. During part of her infancy she was rather feeble; but as she increased her age her constitution became from as that of other children. In the same year ~~[illegible]~~ I removed with my family to a small house in the middle lane in Deerfield. At the age of four Fanny was put to the School of Miss Eunice Woodbridge near the centre of the village, where she continued till ~~this~~ excellent instructress relinquished the school. She afterwards attended the schools of Miss White, Mrs. Newell and Miss Hannah Barnard, in ~~this town~~. At the age of twelve she entered as a student in our Academy ~~in this town~~, where under the successive tuition of Messrs Chester, Hitchcock & Wells, Misses Sally Williams & Jerusha Williams she made good progress in reading writing English Grammar, geography, arithmetic, rhetoric & painting. In English grammar her proficiency was such that Mr Wells, her last Preceptor, readily granted her his certificate of her accuracy. For a number of years she assisted me in my office of Registry of Deeds, and became so thoroughly acquainted with its duties that, when necessarily absent, I had the utmost confidence in the correctness of her management; and at all times she took from me much of the burden of that laborious office. In 1812 she was invited to

to take the charge of a School in Bennington Vermont, which she accepted: In this school she continued most of the summers of 1812 and 1813 and I believe discharged its duties with satisfaction to her employers. Deprived of the company of her parents & and youthful associates she there learned duly to appreciate her paternal residence. In her letters she expressed great attachment for her friends and sighed for the time of her return to Deerfield. In one of them she says "How happy should I be had it been my fortune to have spent my days at home". In another "Ah! what so refreshing, so soothing, so satisfying as the placid joys of home. When I look forward to the time of my visiting it, I almost despair".

Having completed her term of service in the school at Bennington, [illegible] returned to Deerfield in the fall of 1813, and again went into my office where she continued to assist me occasionally until I resigned it, in 1814. The 1st of June 1815, she was married to David T. Dickinson Esqr. of Glens Falls in the State of New York; a son of Col. Thomas W. Dickinson of Deerfield; and in October of that year removed with him to that place, where he had previously resided for some time, and entered upon the practice of Law, with Aschel Clark Esqr. a gentleman of considerable eminence in his profession. In February 1816
[illegible]

Jenny accompanied with her husband visited us, and in March they returned to the Falls. In October the same year she visited us the second and last time, with us the Wing of Glen's Falls; and in the same month her husband came after her & both returned to Falls the latter part of the month. Immediately after her arrival she informed us by letter, that she was in health and bore the journey very well. This was her last letter. Nearly six weeks elapsed before we again heard from her; during which time we were anxiously and every mail, looking for a letter, as her then situation excited in us considerable solicitude. On 24th of January 1817 a letter, closed with a black seal, arrived, which announced that on the 8th of January Jenny was delivered of a son, and (Oh painful to relate) on the 14th died of a puerperal fever. The effects of this melancholy intelligence are depicted in a letter I wrote the disturbed husband on the 24th of January, in answer to his, a copy of which is inserted in the former part of this article. By a subsequent letter he particularly the circumstances of Jenny's sickness & death, in mournful and affectionate language. (See a copy page 128.)

Jenny was of the middle size, rather slender and well proportioned; her features regular but not what are commonly called beautiful; her eyes blue indicating firmness and determination; her hair dark brown, and flaxen, and her deportment affable and engaging. She was generally gay and animated but thoughtful. At times

[illegible] participating in social mirth and innocent recreation, yet never loosing for a moment a most perfect self command, or in the smallest degree overstepping the bounds of that delicate decorum, which is one of the brightest gems in the character of woman. Tenderly alive to the happiness of her relations and friends – kind and condescending to her inferiors – in all her words and in all her deeds continually shone forth those amiable charities, and exalted virtues that emanate from a pure and noble heart." She was remarkable for method and, [illegible] in her business; industrious and economical, and her affairs were always in the best order. What could be done to day was not put off for the morrow – She meddled not with the business of others, and was tender of the reputation of all. But of her virtues it may ill become a friend to speak, and he may be blind to her faults. These undoubtedly she had, for she was human, but it is a consolation to believe that they were not great: And if general esteem is a mark of worth such as she was worthy. The following notice of her was inserted in the Friendship Herald of July 4th 1817 by a

personally intimately acquainted with her. Perhaps it may be deemed too flattering: but I have the satisfaction to find that those to whom she was best known, consider the portrait as just

"Miss Dickenson's character was such as to command the respect of all her acquaintance. All esteemed her for she was their friend. The wise esteemed her for she was their companion. The good esteemed her for she was their sister. The wicked esteemed her for she was their monitor. In acquaintance are able to say of her, that she was possessed of those powers of intellect united with a disposition in the highest degree amiable; with a combination of virtues that constituted in her a stability and excellence of character rarely possessed by an individual of either sex, at so early a period of life, as the age at which she died. In all her deportment she seemed guided by those principles of wisdom found in the wise and good of more advanced years. She was faithful to her duty in the various capacities of a daughter, wife and friend. She seemed more desirous to do good than to be thought to do good. To her afflicted companion, her parents, brothers and sisters, her loss is irreparable, and many a heart shall bear testimony that a void is made in the society of the good; and many a tear shall declare that sympathy is still a native of the human breast, and that those connected by the ties of

consequently are not above affected by the misfortune of this [illegible] excellent young lady.

"Man's born to troubles and to laughs and sighs;
Comes forth and falls and groans and dies"

Fertheen's Lament. (Compiled from Ossian.)

Why bursts the sigh of Armin!.. Is thine cause to mourn? Sad! I am indeed; nor small my cause of woe.. Dark is thy bed O Dowra! low thy pillow of dust! clos'd thy sleep in the tomb. ~~Lowly pillow of dust~~ dust!. Narrow is thy dwelling now! with three steps I compass thy grave. Fertheen is my Daughter!.. Dowra my dear to my soul hast thou been! thou wert fair; fair as the morn on the hills of Fiona - sweet as the breathing gale. Lead me to the place of her rest, that I may behold her.— The tomb is at Rushy Lumon, a stream with foaming course, in a distant land. Pleasant be thy rest, lovely beam. Soon hast thou set on our hills - thou hast left us in darkness, first of the maids of Lutha; but thou risest like the beam of the east among the spirits of thy friends!— Cease a little while O wind! Stream be thou silent! Let my voice be heard on the heath. [illegible] wood"

Receive thou Father of Duanamuse; but thy Daughter heareth them not.
Deep is the sleep of death! Silent forever! - No more shall I hear her voice - no
more shall she wake at my call. Pale in the earth is she, the softly blushing
fair! When shall it be morn in the grave, to bid the slumberers awake?
Will none arise in pity? - Thou art gone forever! Thy mournful shall
sit on thy tomb, but thou hearest them not. Farewell! thou silent dear.
We too shall be no more. - Hence I come in the midst of sorrow. My sighs
arise with the beam of the east; my tears descend with the drops of night.
Why did I not pass away like the flower of the rock that lifts its
fair head unseen and strews its withered leaves on the wind? -
Sweet are thy murmurs O stream! but more sweet is the voice
I hear. It is the voice of Alpin, the song of sorrow mourning for the dead.
Alpin my son, why alone on the Silent-hill! Why complainest
thou as a blast in the wood - as a wave on the lonely shore? Mournful
is thy tale! - Lonely roe, along the heath he slowly moves, with
silent steps. His dear is in his dream cast eyes - his sighs rise at times,
in the midst of his friends, like blasts that shake their unfrequent
wings after the stormy winds are laid. The winds are departed to
their place and thou alone mournest there. - Desolate is the
dwelling of Duanamuse - silence is his house! Silent is the hall of my
joy. I sit in my grief - I wait for morning in my tears - my life
flies away like a dream. Why should I stay behind? - Bring rest
Carril, bring not his memory to my mind - my soul rushes
at the remembrance - my eyes will have their tears. I hear not the
voice of the bard - the sons of song are gone! - But I will remem-
ber him - I will see the friend of them that - Roll on ye dark brown

Seems for ye bring no joy on your course! my voice remains like a blast that roams lonely on a sea-surrounded rock, after the winds are laid; the dark mist whistles there. Sons Sad! not small is the cause of my woe.

Notes and Illustrations.

The foregoing lament is compiled from the Poems of Ossian and is wholly in his language as given by Macpherson. No corrections are admitted excepting those necessary to preserve the unity, and these are few.

"Why burst the sigh of Lumon!" Lumon the Father.

"Dunra" the deceased Daughter.

"Rushy Lumon a stream with foaming course" this will apply to the Hudson, generally above Fort Edward and particularly in the vicinity of the interment of my Daughter. There the Lumon falls down a prodigious steep, called Glens Falls and forms a picturesque and

and magnificent scene. The Cataract is uncommonly variegated, wild and roaring, insomuch that it is impossible to give any tolerable discription, without a plan and views.

"Alpin"; the bereaved husband.

"Why alone on the Silent hill" The burying ground is on a elegated land overlooking the River and Cataract, a little west of the village.

"Corril" one of the bards mentioned in Ossian

"Lutha" may represent Deerfield, Fanny's native place.

Glen's Falls, is a village on the left bank of the Hudson about 50 miles above Albany; 9 miles from the south end of Lake George and three miles above Sandy-Hill or the village site of old Fort Edward. The country in the vicinity of Glen's Falls is rendered interesting by the many singular occurrances mentioned in the histories of our wars. A few miles north, on the road to Lake George, in the year 1755 a body of provincial troops under the command of Col. Williams, Brother of Lieut. Thomas Williams formerly of this town, were ambuscaded & defeated by a party of indians; the beloved and much valuable men, from this & other towns in Hampshire & Berkshire, were killed. In 1757 near the same place, a horrid massacre took place of the Garrison of Fort William Henry, which had surrendered to the

French General Montcalm took place; in which several officers and soldiers from Deerfield were sufferers. In 1777 Genl. Burgoyne's army surrendered to the Americans, at Saratoga about 18 miles below Glens-Falls, after two hard fought battles near Stillwater a little below the former place. The savage ~~murder~~ of Miss McCrea, which excited such universal horror, at the time, was perpetrated, near Fort Edward in the same year by a party of Indians attached to General Burgoyne's army.

The country about the falls has been settled since the Revolutionary war, and is now considerably populous. I

Many of the exploits of the famous American partizan, Major Rogers, in the war of 1755, were performed about Lake George and the south end of Lake Champlain, not far distant from the Falls.— In Rogers' Corps were many men from this section of the Country. ~~At~~ not far from Halfway Brooke, near Glens falls, in 1758, a party of our troops and many teams were cut off by a party of French and Indians.

Note. The teams were cut off between Glens Falls & Sandy Hill on Cold-Brook near Sandy Hill — as stated by Abraham Wing and others. This affair is sometimes represented to have been near Halfway Brook — an error.

Elegy. By a friend.

Our sympathies will oft enquire
O why once whence fore is it so?
Must fondest hopes so soon expire?
The bitter cup o'erflow with woe.

Will youthe and health and friendly care
Be no defence against the stroke?
No- all such hopes are built on air,
They're brittle clay once must be broke.

Of all the gifts of bounteous heaven
To cheer the friendly mortal here,
This Child we thought in mercy given;
But now alas! must disappear.

From distant from a Father's care,
And from a mothers fond embrace;
No Sister's friendly aid was there,
To calm they fears, or relieve they face.

(Daniel

144 Deni'd the mournful pleasure too
Of weeping o'er thine early grave;
Naught then remains for us to do,
But try the Infant's life to save.

Let then a faithful emblem be;
Thy features in its face appear,
This treasure representing thee,
Shall prove a blessing doubly dear.

The child was named Frances Hoyt Dickinson. On the [Friday the] 29 of July 1825, he with a son of Col Ashley, a young lad, went into Deerfield River to bathe. Frances got into deep water and was drowned. He was a very active Boy, and in some particulars, promised to make a likely man. The loss was severely felt by his connections.

22=25 Extract from "Thoughts on Faith. From Mr Butler's Posthumous Works". See London Magazine August 1759.

Almost all the miracles in the Jewish history, from their deliverance from their first slavery, by the plagues of Egypt, to their second captivity in Babylon were performed by the destruction, ruin and calamity of mankind — But all those that our Saviour wrought to confirm his Doctrine, quite contrary, by raising the dead to life, curing of desperate diseases, making the blind see, casting out devils, and feeding of

hungry multitudes, &c. but never doing harm to any thing; all suitable to those excellent lessons of peace, love charity and concord, to which the whole purpose of all that he did or said perpetually tended. - Whosoever, therefore, does endeavour to draw rules, or examples, for the practice of christianity, from the extraordinary proceedings of the Jews, must of necessity make a strange confusion and adulterate mixture of the christian religion, by defacing and allaying it with that, which is so directly averse and contrary to its own nature. And as this unnatural mixture, of two different religions, was the first cause of dissention among the apostles themselves, and afterwards determined and resolved against, by them all: So there is no doctrine of rebellion, that was ever vented among christians, that was not revived and raised, from this kind of false and forced construction".

"The enmities of religious people would never rise to such a height, were it not for the mistake, that God is better served with their opinions than their practices; opinions being very inconsiderable, further than they have influence upon actions

All reformations of religion, seldom extend (further)

further than the mere opinion of men. The commandment of these laws and conversations, are equally unregarded by all churches, how much soever they differ in doctrine & discipline. And though all the reformations our Saviour preached to the world, were only repentance and amendment of life, without taking any notice at all of men's opinions and judgments; yet are the christian churches take the contrary course, and believe religion more concerned in one ~~[illegible]~~ opinion, than all the most inhumane and impious actions in the world."

23=24 Copy of the Letter from Daniel F. Dickinson, my son in Law, announcing the Death of my Daughter Fanny. (See Oct. 21st)

Glens Falls Jan. (Ear) 13. 1817

Respected Father

On the 8th instant we were blessed with a Son. The mothers sufferings were then deemed light. But this day has been clothed with sufferings and woe. Ane lapse hath occurred, that shields around a doubtful uncertainty. Chained only by hope I evade despair! The moment is uncertain! The first medical knowledge of our Section of the Country is exciting us restoring to

health the dear wife, the mother and the affectionate daughter. If that fails to relieve, another day closes the life. O eternal Power! (I will omit till morning)

Morn of the 14th instant. The close has come! She is no more! The disease of which she died was a putrid fever, or child bed fever #. O where shall I find consolation. I am too full of woe for communication. The mail is leaving. I shall write the 16th instant.

From your suffering son
E: Hoyt Esqr — D. W. Dickinson.

Note The above Letter having been mislaid, could not be inserted in its proper place, at the head of Article 21.

puerperal fever the medical name

24=27 Singular Electrical Phenomenon, communicated to the Editor of the Vermont Republican; by Joel Manning Jr Esqr of Andover in that State.

On the evening of the 18th of January last (1817) there was a heavy fall of snow accompanied with lightning & thunder. Coming out of a Neighbour's house, in company with a young man, between ten and eleven (evening), we noticed that the snow fell very fast, but our attention was particularly attracted by the frequent flashes of lightning. After passing a few rods we observed on the top of a stake in the fence a light resembling a blaze of fire about 2

or 3 inches in length, though not so vivid and brilliant. We soon observed that on every stake was a light, and also on the highest branches of bushes by the side of the fence. We soon observed it on our hats, hair and mittens, when held up, not in the form of a large, but of bright white sparks of various sizes, from those with were just discernable to those of the size of a large buck shot. We found that on any thing that was totally smooth & without limbs, there was no light except at the top. We moved those blazes at the distance of about 1½ foot; then some were merely that of an inverted Cone standing on the smallest possible point, whose height was as 3 to 1. On one stake were three of those blazes. On 2 or 3 stakes, upon which they appeared the most vivid, they emitted a sound resembling the hissing of the water in a tea-kettle just before it boils and could be distinctly heard at the distance of 10 or 12 feet. These blazes would disappear at the approach of a stick (or any article, staff) within less than two feet. In this experiment the top of the staff was higher than the stake. Passing over a fence of rails my hands, arms, hat and shoulders were almost covered with this light; and when we shut the small fingers at the distance of 6 or 8 inches from the mouth assumed a shining appearance. These lights cannot be seen for ¾ of a mile except when by the side of, or in a fence, standing timber. About 12 o'clock we returned once more to our quarters, with our hats full as much or more light on our clothes, but no conical figures and no hissing

The light was only visible on high land at some distance from standing timber. Light might have been on the forest trees, but they were not noticed through the falling snow. The appearance was much near the ground, but the highest part of the meteor was the light. It increased very fast from the height of the head to that of the arm extended full length when it was almost round in shape. In this appearance the wind increased the light. Stood with the back to the wind, raise the arm about 8 inches from the breast so high that no smoke would appear on the highest point of the mitten, turn from the wind, with the hand in the same situation, and then it would be more and longer sparks. The conical blaze and hissing was noticed only on the highest bodies, such as the highest stakes &c. On bodies of equal height with the stakes there were no lights, and no hissing or conical form unless the stake was capped with wood; when this was knocked off the light soon disappeared. At the distance of 2 or 3 miles in different directions lights were seen, not in such quantity, but generally one individual light. Similar lights were said to have been seen by people passing over high grounds in Reading, 10 or 20 miles north of Audover.

The above is the substance of the Hannings account published in the Franklin Herald, March 4-1845. Similar phenomena were observed in several towns westerly of Deerfield, particularly in Hinsdale, Conway, Bolton and several towns westerly of Brattleboro' Vt. In Deerfield it rained during part of the time mentioned attended with lightning & thunder. It was

It was noticed that the lightning was very frequent & almost universal over the heavens except towards the N.E. the usual zigzag streams

From the foregoing statements I conclude that the clouds, and perhaps the whole atmosphere, over the places noted, were highly charged with electricity, probably of the negative kind as indicated by the divergency of the cones of light at the strokes; once that all conductors of electricity: gave off the electric fluid to restore the equilibrium between the clouds and earth. The circumstance of the phenomenon being more conspicuous over high grounds seems to justify the above conclusion; and it is highly probable that on the top of standing trees the light might have been seen by an observer placed above them.

Why the equilibrium was not restored by more violent streams of lightning, and by what means the clouds and atmosphere became so highly charged, is not easily explained.

The phaenomenon was certainly singularly curious, as well as uncommon, and well worth the attention of the philosophers.

The experiment of the electrified kite, communicated by the Batchelors & the American Academy of Arts and Sciences, and recorded in the 1st Vol of their Transactions, will throw some light on the above phaenomenon.

among the general officers employed in the late war no one has acquired more fame than General Winfield Scott. By the testimonies he is in possession of in terms of the highest commendation; as the boast of his country; the favorite and darling of the army &c. of his bravery I think there can be no doubt; in the Battles of Queenston, at Fort George, Chrystina and Bridgewater, or Niagara, he evinced a bravery bordering on daring, & his talents as a disciplinarian are undisputed. But whether he possesses that esprit genie militaire which is peculiar to great generals are have yet to learn. Without this a conqueror can neither be called a hero, nor an able general, but only a lucky soldier. A man may be brave on occasion yet lack all the qualities of an able general; he may also be thoroughly acquainted with all the minutia of the science and yet be unfit for command. "The child, says a military writer, never formed a general" To be such, God in the bounty of his providence must have caused him to be born a great man. On the contrary the pursuits of little objects must narrow and shackle the mind. Those habits which insure mechanicity will almost always preclude excellence. A general pleader is not a Somers or a Clarendon; nor is a good adjutant a great general. There is hardly any man so humble by gifted by nature, that with sufficient application cannot

become the manner. To constitute the latter requires the assemblage of some of the noblest attributes of our nature; that power of mind, that grasp of thought which seizes almost every thing as if by intuition; which thinks, checks and acts in the same moment; which forms the best possible judgment in the shortest possible time; which is not only cool and collected but is raised and excited by danger; must all be united to form the character of a great general. Add to these qualities great powers of discrimination, a constant attention to the study of the higher branches of his profession, an ample imitation of the great models which antiquity and modern times afford, and above all, the possession of that military imagination by which the king of Prussia pursues in his instructions to his Generals, and without which there can be no excellence in humanity"

Jomini without doubt has one of the first enumerated important qualities of a General; but this without genius will but ill qualify him for the multifarious duties of his profession. Bonaparte was so thoroughly impressed with the truth of this, that after one of his Battles in Italy, having promoted one of his chiefs of Brigade for his great bravery in the action sent him to a Garrison town with the remark "No man could have fought his

his troops with more intrepidity than you have, but you do not possess the genius and talents of a commander".

General Scott may possess all the talents of an able commander, but opportunity, I think, has not been given to prove whether he does or not. He has seldom been intrusted with a separate command, & never in a general engagement. I am certainly prepossessed in his favour and think him eminently qualified in some particulars for a General, and should not hesitate, were I to chuse, to assign to him a high command. I only say he wants more opportunity to demonstrate his talents to his country. The principal question is whether he is as prudent as he is brave? This quality is as necessary as the whole collective assemblage of the others that constitute the able general. To rush suddenly upon an enemy without regard to his strength or position, thinking only of beating him, and without a preconcerted plan of which in case of a repulse, is to put too much at hazard and may be followed by the most disastrous events.

General Scott's attack on Drummond's army, July 25-1814 at Niagara, has by some been considered as bordering on rashness. The detail of this action may perhaps show whether this opinion is correct. On the 25th of July General Brown's army lay encamped at the mouth of the Chippewa, and not being apprized of the advance of the junction Drummond and Riall, he ordered Scott's brigade to march rapidly upon Queenstown

about nine miles down the River. This movement was made in consequence of information which Brown had received (which afterwards proved to be false) that Ryall had attacked a large body of troops near the Niagara & Queenstown. Scott joined the adjutant as he had formed his Brigade for the usual drill and it was promptly obeyed. The whole force under his command consisted of four Battalions under Col Brady, one Major Jessup's Regiment and Ski Veil together with Towsons company of artillery, making in all 920 men, the Brigade-guards being left behind. To these were added Harris troop of light dragoons some mounted men &c &c, making an aggregate of 1050 men. At nearly three miles from the ground the enemy were discovered just in the vicinity of the cataract of Niagara, drawn up on a ridge running out at right angles from the Niagara. This drawing was repeated to Genl Brown then stationed in the rear. This force proved to be the advance of the enemy army, which was advancing to attack Fort Chippewa. Scott received an immediate attack after communicating his resolution (Brown to advance) to the enemy and by the time the message was taken the whole had commenced, and had already known close & general some time before the remainder of the army under Brown came on the Chippewa.

The enemy had already 1500 men in line; the remainder of their force were on their march from Fort George

and arrived successively at intervals of 15 & 20 minutes. The action commenced half an hour before sunset and lasted till about half an hour after night with various success. The ground in front of the British line was level and open; in the centre ~~of their line~~ was a small emin-ence supported by a piece of artillery commanding the plain in front. The Americans fought with the greatest resolution and had turned and beaten the right and left wings of the British out of the field and taken prisoner Genl Ryall, the main alone remaining firm, when Lieut Genl Drummond arrived with the reserve, after the action had raged for an hour & fifty minutes. On his arrival Drummond assumed the com-mand, interposed a new line and disengaged Scott's Brigade, which had suffered severely, and held it in reserve. The action was then renewed; the height and artillery of the British carried, by a gallant charge of Miller's Regiment. The enemy rallied, renewed the charge and attempted to regain his artillery but was repulsed. About half past 10 o'clock the action ceased, both armies holding the ground. then each his Soon after the Americans left their ground, retreated to Chippewa ^soon after to Fort Erie and the British recovered their cannon and were left by the Americans. Genl Scott exposed his person in the most undaunted manner during most of the action and just at its close was severely wounded by a musket ball through his right shoulder and had two horses killed under him. His aid Worth & Brig-ade Major Smith were both wounded at his side. The total loss of his Brigade was 490 in killed and wounded out of 920 including in this number more than 30 officers.

29. Commet discovered

July 4 1819 } Sunday evening about 8 o'clock a Commet was discovered in the northeast part of the Heavens. The nucleus was [illegible] very distinct.

July 5 - At 8h 50' by watch Commets azimuth from the west taken by reading Theodolite 58° 30' allowing 5° 30 for west variation. Alt at same time 9° 12'.

From the above it appears that the Commet was in or near the Lynx at the time of observation.

The Commet was seen at Nantucket July 3d and at Cambridge the same Day. At N Haven RA, at 9h 4m 7s = 103° 58' Declination 45° 17' North, as stated in Springfield paper.

At Cambridge RA 95°. Declination 50 as stated in Centinel.

Dist from Arcturus 88°.45

Lyra 92.18 Place between Head of Lynx and Auriga

New System of Cultivation. Maj. General Alexander Beatson late Gov. of St Helena is the author of this work: an Edition of which in a large Pamphlet is published in Philadelphia, in the year 1821. The cultivation of arable Land is without Plowing, using Lime or Dung or Fallows. A Scarifier is used instead of the plow and usual harrows; burnt clay for manure. The surface of the ground is burned to clear it of weeds. The burnt clay is supposed the best manure; and it produces no weeds &c.

Bearings of Places

27-30 Bearings taken from the Prospect-Rock, on the summit of Deerfield East mountain, Sept 12-1823. The station called A.

1. Steeple of Northampton Meeting House S 14°-12' W. by Academy Theodolite
   Do — S 13 + W by my Hanks Compass.
2. Highest peak of Mount-Tom — S 14°-48' W by Theodolite
   Do — S 14 00 W by Compass.
3. Steeple of Muddy Brook Meeting House S 16°-30' W by Theodolite
   Do — Do — S 14,00 W by Compass.
4. Steeple of Whately meeting house — S 25°..00 W. by Theodolite
   Do — S 24..00 W. by Compass.
5. Dams House, SE angle top Bowns Long hill — S 46°-54' W by Theodolite.
6. Summit of Saddle mountain in Will's. N 69-45 W by Theodolite
   Do — N 70-15 W by Compass.
7. Steeple of Greenfield meeting house — N. 0-30 W by Theodolite
   Do — N 1. 15 W by Compass
8. Steeple of Deerfield meeting house — N 32:00 W by Theodolite
   Do — N 32..45 W by Compass.

Hence it appears that the instruments used in the observations, differed a little more than a degree in the Bearings: In those south westerly the Theodolite gave the greatest angles; and in those N Westerly the compass gave the greatest angles, uniformly: Both are called good instruments.

The above bearings are from the magnetic meridian; the Variation 5°..30' West (nearly).

Bearing of Russells Prospect-house from Banks of Deerfield River at Maceys House S 4, 36 E by Compass. Course from said Macey's point to SW L Deerfield Street E 1/2 N by Compass 44 Rods. Course of Street N 15 E [illegible] to meeting house Yard. Bearings

Bearings of Places

Bearings taken with a good pocket compass Sept. 1823.

From Aaron Dickinsons in Hatfield, at the north end of the Pantry Road to Deerfield meeting house, as nearly as could be determined without a view of the said Meeting house, N 13° E.

From said Dickinsons to South Sugar Loaf N 30° E

From Do to Rupells Tavern in Muddy Brook N 25° E

From said Rupells, to Whately meeting house, taken from the top of the Tavern S 34 W.

The above are not to be relied on, for accuracy.

Bearings taken from the Prospect house SWZ on Sugar Loaf, by Hawks Compass, August 8-1822.

Shelburne meeting house N 23°-30 W. Muddy Brook meeting house (the Spire) N 27°-30 W. Whately do S 52°-20 W. Northampton do S 16°-30 W. Highest point of Mount Tom S 11 W. West Springfield meeting house S 8°-30 W. Hatfield do S 4°-40 W. Hadley do S 4° W. West Prospect house on Mount Holyoke S 4°-30 W. Amherst meeting house S 23°-20 E. Belchertown do S 31°-20 E. Sunderland do S 60°-30 E. Windsor do N 52°-20 E.

August 13 } Bearings taken in the Banister of Deerfield meeting house High peake of S W Town S 12 W. Rocky Prospect on Deerfield Et Mons. S 32°-30 E. To Dwight house (S E L) S 24 W. To Steeple of Greenfield Meeting House N 9 E. Note observations by Theodolite

Course ran by my Brother, Col Hayt, several years since, from Hatfield Brook between N Hampton and Hatfield N 16° E - full 20 or 30 rods east of meeting House Langhill.

Bearing of Mount-Tom (highest peak) from a point 4 rods E of the Brick meeting in Granby Village, by Theodolite, S 12° 30' W. Dunfield Stuart lies a little East of the above line, as I conclude, does North ampton Village. The bearing from Dunfield Stuart to mount tom as taken August 13 - (see opposite page) is 30 minutes less than the one above; But it should be more. Hence I conclude the needle was effected by the iron about the bell as I apprehended at the time.

Bearings from Prospect House on Sugar Loaf (SWL) Sept. 15. 1828 by Theodolite.

N Hampton Meeting house S 16° 45 W. Peak of Mount Tom S 16° 24 W Wrattly meeting house (spire) S 52° 41 W - Deacon Dickinsons at Pantry Road S 31° 45 W (outhouse) - Muddy Brook Meeting house N 27 W (spire) - West house on Mount Holyoke (SWL) ~~S 5 W~~ S 4° 44 W - Hatfield meeting house S 8 W - Amherst Meeting house S 22° 44 E - S E Russells Barn N 52 W (distance 1 mile) Course of Muddy Brook Stuart N 41 E (South part of Do at Russells) Distance from Cooleys Shed, Complaint adjoining his barn to centre of Muddy Brook Steeple 174 Rods: from said Steeple to the apple tree (the proposed point of departure from the North end of

Muddy Brooks Steeple) to wappin Long hill 289 Rods, by measure; thence by wappin to south end of Deerfield Street as measured by our Selectmen 1015 Rods Route from same to same by Beavers as stated by Mr Ware (as he says taken by Selectmen) 1068 –

Bearings taken in the Steeple of Whately meeting house Sept 18–1823

To Simon Dickinson house commencement of parting Road S 3 E – West point of Mount Tom S 8:45 W – West house on Mount ~~Tom~~ Holyoke S 8: 30 E – Hatfield Meeting house (spire) S 20 E – Greenfield Church (Strongs) N 15 E – Smiths house at Mill River N 3½ W (about 2 miles) – Course from SW L Capt Graves Door Yard, to a pine in the direction of fire as seen when Sheriff Lymans Barn was burning at N Hampton S 6 W: said Graves point is 6 rods SE of centre of Whately Steeple. By Compass: Needle perhaps affected by Iron about Bell

Bearing from SE L Davis house at Beavers Long hill to Muddy Brook Steeple S 17–30 E. From do house to Deerfield Steeple N 23:30 E – By Compass –

Observations for distances ~~for ass~~ by a series of △s, made at Muddy Brook.

Objects chosen. The spire of Muddy Brook meeting house A the centre of a shed joining Capt Cooly's Barn C (on east side) and the SW L of prospect house on Sugar Loaf B. – Viz ∠ A 56–44 } by Theodolite (taken on the limb without the needle)
∠ C 96–39 }
Sum 153–23. this from 180 = 26°–37′ = ∠ B. See Fig.

Base A C, carefully measured by Chain on level ground = 174 rods

Then for distance BC.

		Logarithms
1.	Sine ∠ B = 26-37 =	9,651297
	: 174 rods ———	2,241795
	:: Sine ∠ A = 56-44 —	9,922272
		12,164067
		9,651297
(BC) :	325,6 rods ———	2,512770

For BD.

3°.	Sine ∠ D ———	9,505600
	: BC = 325,6 =	2,512770
	:: Sine ∠ BCD —	9,999500
		12,512270
		9,505600
: BD = 1015,4 rods.		3,006662

= 3 miles 55,4 rods

For distance from Cooleys Shed C, to Whately meeting house cupola D.

∠ BCD = 07-15

Course of CD = 34 0 0 Southerly, Subtract

S 53. 15 E course of CB.

or N 53-15 W

S 52. 41 W course from B to D.

Sum 105-56. And 180 — 105-56 = 74-04 =

∠ CBD. Then BCD = 07-15 + CBD = 74-04 =

161-19 = B + C. Consequently 180 — 161-19 =

18-41 = ∠ D.

2°. Then Sine ∠ D = 18-41 ——— 9,505600

: CB = 325,6 rods — 2,512770

:: Sine ∠ CBD = 74-04 — 9,982986

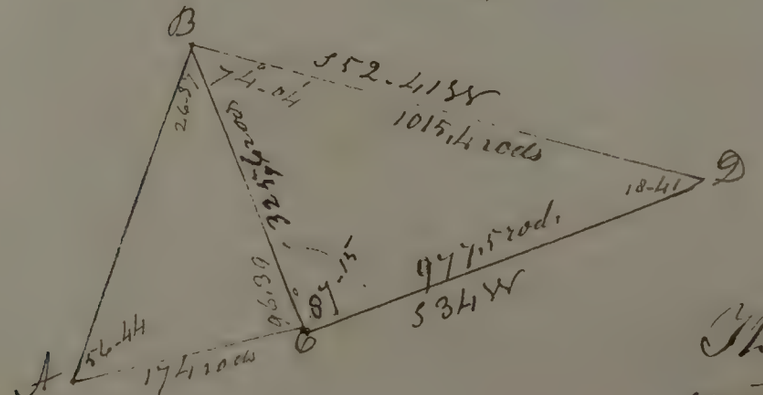
12,495756

9,505600

: 977,5 rods = CD — 2,990140

= 3 miles 17,5 rods.

Then fare from Cooleys Shed to Whatly cupola is 3 miles 17,5 rods and from SWL from not house on Sugar Loaf to same is 3 miles 55,4 rods.



Note. The shed C is a few rods SW of Rufus Stevens on the south side the Lane. The ∠ CBD is deduced from the magnetic Bearing of BD.

The accuracy of the results depends on the correctness of the admeasurement of the Base AB. And as it is probable this may not be perfectly true the others lines may not be true respectively. so.

Observations made on Holyoke S W L mest prospect house (Station E on map)
Magnetic Bearings with Theodolite.
Whately meting house (spire) N 30 W - Hadley Do N 2 - 30 W - Hatfield do
N 1° E - Rupells prospect house on Sugar Loaf N 5 - 15 E - Muddy Brook
meting house (spire) N 2° E - West Springfield do. S 14 - 30 W - Chapel at
Mulberry works at Springfield S 11 W - Saddle Mountain N 45 - 30 W.

From Station F on map viz Roof of Northampton meeting house close
to the Northside of cupola the following Bearings were taken with Theo.
Hatfield Steeple N 32 - 30 E - Hadley Do N 53 E - Deerfield prospect
Rock N 13 - 30 E - Amherst meting house (spire) N 63 - 30 E. -

The air being hazy, on the day of observation (25 Sept) distant objects
could with difficulty be seen; and the pleasure of the prospect was
much diminished. The mountain presents a sharp summit of some
width; the declivity south much more gradual ~~south~~, than on the
north side, which in many parts is abrupt.

The magnetic bearings, as noted in the preceding pages, appear not to coincide
when made from distant points, probably owing to the imperfection
of manner in which the angles were read off - and perhaps the needle
may have been affected by some attraction of the mountains and
the iron in the cupolas of the meting houses where the observa-
tions were made.

31 Discharge of water over weirs, or dams, a waste-board on the top.

Let D = the quantity of water discharged in cubic feet
l = the length of the waste board = 18⅔ inches
H = its depth -
M Bidat has given the following formula reduced to English inches: The formula as altered by Dr. Robison is

$$D = l.\sqrt{130.032.H^3} \text{ or}$$

$$D = 11.4172\ l\ H^{\frac{3}{2}}$$

That is, multiply the square root of the cube of the depth of the upper edge of the waste board below the surface, by 11½, and by the length of the waste board, and the product will be the quantity discharged in English inches

Note When the water is against the Rule is good; but if it has room to reach the opening (or sluice) with any velocity, multiply the area of the section by the velocity of the stream.

See Edin. Ency. art Hydrodynamics Vol. 10. p 840

approved writers on Hydrodynamics.

Chevalier Bidat. Traite d Hydraulique et Pyrodynamique 2 vol 8vo 1786 2 third Vol 1816
Prony. Nouvelle Architecture Hydraulique 2 Vol 4to Paris 1790
——— Recherches Physico-Mathematiques sur la Theorie des Eaux Courantes 4to Paris 1804
Eytelwein. Hand-buch der Mechanik und der Hydraulik. Berlin 1801.
Robison. System of Mechanical Philosophy Vol 2 & 3. See Edin. Ency. Vol 10th p 769

164 32 Books in the Athenaeum Boston 1827 (and other Catalogues)

Ruston's Treatise on new Philosophical Instruments 1 vol
on mathematical Instruments 1 vol } Athenaeum

Entick (John) General History of the war 1755 ...) 5 vol 8vo London 1765 Athe
with maps plans & prospects.
Farrar's Elements. Electricity & Magnetism on Electro-Magnetism 1826 Boston 1 vol Cambridge
——— Elements of Astronomy &c 1 vol.
Robertson (John) On the use of Mathematical Instruments. Athenaeum
Robinsons Mechanical Philosophy 1 or 2 vol Do Robison

Major Rogers Robert Journal of the late war in America 8vo Lond. 1765
——— ——— Journals in America 8vo London
——— ——— Concise account of N America } Athenaeum
——— ——— Account of N. America

Trigonometrical Survey of England & Wales. Athenaeum

Gregory's Economy of Nature 3 vol 8vo Athenaeum
Capt Franklin's Journey to Coppermine River with maps 2 vol 8vo (& Polar Sea) Athenaeum
Coxe's Philosophical Treatise on the Passions 1 vol. Athenaeum
Bracy Clark's Veterinary Art, or the principles of Medicine as applied to a knowledge of the structure
functions &c of the horse & other animals 2 vol 8vo plates. (Osborn's Catalogue)
Hunter's Complete Dictionary of Farriery & Horsemanship 1 vol 8vo (Do)
Lawrence John Philosophical and Practical Treatise on Horses and the moral Duties of
man towards the Brute creation 2 vol 8vo. (Osborn's Catalogue)
Robertson's General View of the Natural history & its connexion with the sciences of Medicine
& Agriculture including an Essay on the Economy of Animal ... 2 vol 8vo ...

Bingley's useful knowledge 3 vol 12mo.
Beckman's History of Inventions & Discoveries 4 vol 8vo 3d Edition enlarged Do.
Thiebault's Anecdotes of Frederick 2d - 2 vol. 5 dollars Osborn Cat.

On Natural History.

Natural History appears so interesting and important, as to de serve a place in every system of education, and ought to be taught not in colleges merely, but in every parochial school. Information on this subject, thus obtained, would prove highly useful in after life, and infinitely more valuable than many of those branches of ornamental knowledge in which children are initiated. We are far from undervaluing the languages of Greece & Rome, those valued stores of learning. ~~but though not of~~ science, we are equally far from undervaluing the genteel accomplishments of music, dancing or riding. But we are confident, that were the advantages to be obtained from the study of natural History justly placed in competition with any, or with all of these, it would probably be allowed to occupy a more conspicuous place, in public opinion than it has hitherto been suffered to possess. — If some of the pursuits of the naturalist are often smiled at, and considered as a childish amusement for a cultivated mind. We in our turn despise popular ignorance and regard every object which the Deity has created as worthy of our notice — whether it be the mite or the elephant; the hyssop on the wall, or the cedar of Lebanon, the shell-boy or the getting insect.

Edin. Encyc. Art. Natural History —

34. Remarks from Lyf of Boscovich. Edinburgh Encyclopedia Art. Boscovich

"The habits of abstract thought and close reasoning, with a natural philosopher must necessarily acquire, are utterly incompatible with that quickness of association and versatility of thought, which are the principal sources of extemporaneous elocution. These antisocial habits, however, are less hostile to his colloquial efforts, than the nature of the subjects with which the mind of the natural philosopher is principally conversant. While the study of poetry and belles lettres, furnish numerous and inexhaustible topics of general conversation, the man of science is prevented from introducing subjects which would be generally unintelligible, and in them denied the opportunity of displaying his knowledge and his talent, which is granted to those who cultivate literature and the fine arts."

Extract from the Teachers Geology of the U.S. The Iron. Vol 1 New Series

"When it is considered, that less than half the time necessary to give a smattering of any of the dead languages at our academies, would be more than sufficient to give an youth a complete knowledge of the common and useful application of earths and rocks, we may reasonably hope that one day some portion of time will be appropriated in our colleges & universities to the studies of understood utility; and that a knowledge of substances, their properties and their uses, will be permitted in some degree to encroach on the study of mere words. The time is fast approaching when what is called learning will not in all cases be deemed, as it has been too many, synonymous with knowledge.

Previously to one of the secret expeditions during the war which ended in 1763, the minister had given orders to the different presiding officers, in the military, navy and ordnance departments, to prepare a large body of forces, a certain number of ships, and a proportionable quantity of stores &c. and to have them all ready by a certain day. To these orders he received an answer from each of the officers, declaring the total impossibility of a compliance with them. Notwithstanding it was then at a very late hour, he sent immediately for his secretary; and after expressing his resentment at the ignorance or negligence of his majesty's servants, he gave the following commands: —

"I desire Mr Wood, that you will immediately go to Lord Anson; you need not trouble yourself to search the admiralty, he is not to be found there; you must pursue him to the gaming house, and tell him from me, that if he does not obey the orders of government which he has received at my hand that I will most assuredly impeach him. Proceed from him to Lord Ligonier; and though he should be bolstered with harlots, undraw his curtains, and repeat the same message. Then direct your course to Sir Charles Frederick, and assure him, that if his majesty's orders are not obeyed, they shall be the last which he shall receive from me." In consequence of these commands Mr Wood proceeded to White's and told his errand to the first Lord of the Admiralty; who insisted that the secretary of state was out of his senses, and it was impossible to comply with his wishes: "however, (added he, as madmen must be answered, tell him that I will do my utmost to satisfy him." From thence he went to the commander in chief of the forces and delivered the same message. He also said that it was an impossible business; "and the secretary knows it, (added the old Lord): nevertheless, he is in the right to make us do what we can; and what is possible to do, inform him shall be done". The surveyor general of the ordnance was next informed of Mr Pitt's resolution; and some little consideration, he began to think that the orders might be complied with in the time prescribed. The consequence at last was, that every thing, in spite of impossibilities themselves, was ready at the time appointed.

Ency Appendix Vol. the art Pitt

Ship Building, or ~~Naval~~ Naval architecture, is the art of constructing a ship so as to answer a particular purpose either of war or merchandise. Ency Abrid

Rifled cannon

In the beginning of the year 1774 Dr Lind and Capt Alexander Blair of the 69th Regt. of foot invented a species of rifled field pieces. They are made of cast iron; and are not bored like common pieces, but have the rifles moulded on the core after which they are cleaned out and finished with proper instruments. Guns of this construction, which are intended for the field, ought never to be made to carry a ball of above one or two lbs. weight, a leaden bullet of that weight being sufficient to destroy either man or horse. It need not weigh more than 100 lbs & its carriage about another 100. a couple of good horses may transport 6 of these guns & the carriages if put into a cart.

The rifles make one spiral turn in the length of the bore; but go no nearer the breech than ~~the~~ 2 calibers: and then terminate ~~with~~ with a gentle slope in half a caliber more, so as not to prevent the cartridge with the powder from being sent home to the bottom of the gun which would otherwise constantly happen with flannel cartridges, ~~[illegible]~~ sometimes with paper ones if not made to enter very loosely. The shape of rifles is semicircular, their breadth being = to the diameter, which is 1/16 of a caliber and their depth = to the semidiameter or 15/16 of a caliber. The bullets are of lead having little knobs cast on them to fit the rifles of the gun. Being thus made of soft metal, they do not injure the rifles; and may also save the army the trouble of carrying a great ~~qu~~ quantity of shot about them, since a supply of lead may be had in most countries from roofs &

Iron balls may be cast with knobs fitted to the Rifles, or lead knobs may be placed on the balls they will not wear the gun too soon and the knobs will not much retard the balls. Such pieces might be loaded almost as quick as common field pieces. They are sometimes furnished with a sector & telescope with cross hairs to hit right the mark with more certainty.

Encyclopedie Vol. 8. art. Gunnery

Trans. Benj. Smith Barton's Memoir concerning the Fascinating Faculty of Rattle Snake Vol 4 Trans. Philosophical Society.

"That the belief of the existence of this power should have been so general among the uninformed part of a people, ought not to be wondered at. The human mind, unenlightened by science, or by considerable reflection, is a soil rich in weeds of superstition and credulity. It is even prone to believe in the wonderful, even when this belief, as is often the case, brings with it fears, and cares, and misery. The bondage of the mind in superstitious credulity, is great and heavy. Neither religion nor virtue can give it's freedom. This it obtains from science. How important then, even in this point of view, is the enlargement of the mind by science.

But it is, surely, a matter of some astonishment, that this belief should have been submitted, in all the forms of it's romance, by men of learning, of observation, and of genius: by those who have the Book of nature in their hands; that book which will, in some future and happier age, eradicate many of the fooleries which disfigure and mock the dignity of human nature: by classical scholars, grown old in the disbelief of similar fables, brightened and embellished by the charms of poetry; and also by the infidel, who denies the authenticity of scripture-miracles, face of truth, and though they cannot shake the firmness, and more impenetrable than the imaginary fact which